THE 1991 INTERNATIONAL PIPING PLOVER BREEDING CENSUS - SASKATCHEWAN

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THE 1991 INTERNATIONAL PIPING PLOVER BREEDING CENSUS - SASKATCHEWAN

EXECUTIVE SUMMARY

A total of 486 waterbodies in Saskatchewan were surveyed between 25 May and 21 June 1991 for Piping Plovers as part of an international effort to survey all breeding sites across North America during the same time period.

The total count for Saskatchewan was 1162 Piping Plovers (481 breeding pairs). Plovers were found at 71 waterbodies; one or more pairs were found at 57 of these. The number of Piping Plovers in Saskatchewan is 21.4% of the total North American count of 5422 Piping Plovers (2427 breeding pairs; S. Haig pers. comm.). An estimated over 95% of total known habitat in Saskatchewan was surveyed.

Four basins and one geologically formed area had 987 Piping Plovers, comprising 85% of the Saskatchewan population. The five areas of concentration and the number of birds at each were:

Lake Diefenbaker	276	(arms of the lake 223; body of the lake 53)
Big Quill Lake	151	
Manito Lake	111	
Chaplin Lake	103	
Missouri Coteau	346	(excluding Chaplin Lake)

Lake Diefenbaker had the largest breeding population of any basin in North America, with 5.0% of the total population (7.9% of the prairie population, S. Haig pers. comm.). Big Quill Lake ranked 6th in North America, with 2.8% of the total population (4.4% of the prairie population), Manito Lake 8th with 3.3% of the total population (2.0% of the prairie population) and Chaplin Lake 10th with 1.9% of the total population (3.0% of the prairie population).

Critical Piping Plover Breeding Habitat, determined on the basis of recent use by breeding Piping Plovers, was identified and mapped at 62 wetlands. Threats to the habitat are noted at sites where these were identifed, and specific management actions are recommended. General recommendations for the conservation of this species are also listed.

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INTRODUCTION

Historical population information on Piping Plovers in Saskatchewan is limited (Ferry 1910, Renaud 1974, Renaud et al. 1979, Smith 1987). Piping Plovers were likely never abundant overall because of this species very specific needs and choice of unstable habitat. The first suggestion that their numbers are declining occurred in the 1980's (Haig 1985); that a decline may be occurring has been further supported by recent surveys and threats posed by increasing human use of its habitat. For these reasons, the Piping Plover was designated as endangered in 1985 by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

The Canadian Piping Plover Recovery Teams and the United States Piping Plover Team agreed to conduct a coordinated international census of all Piping Plover breeding habitats in 1991. The status of Saskatchewan populations is critical to this international effort: this province's population accounts for a large portion (likely 12-50%) of the total continental population (Goossen 1990a). Previous surveys have shown that large saline lakes in Saskatchewan are the centers of an abundance of Piping Plovers. These include some of the previously recognized most important Piping Plover areas in the world (e.g. Lake Diefenbaker, Big Quill Lake and Chaplin Lake).

Since 1984 formal Piping Plover surveys have been conducted in Saskatchewan to determine numbers and important breeding sites (Harris et al. 1985, Weidl 1986, Harris et al. 1987, Harris 1988a, Purdy and Weichel 1988, Harris and Lamont 1989, Harris and Lamont 1990, Johnson and Seguin 1989, Hjertaas 1991, Harris and Lamont 1991). The provincial population estimate of 2000-2500 in 1984 was down to 700-800 in 1986, and to 500 in 1988 (Goossen 1990a).

The focus of 1989 and 1990 surveys had been to prepare for the 1991 International Piping Plover Breeding Census by identifying occupied and potential habitat in areas that had previously remained unchecked. Saskatchewan is a challenge due to the large number and variety of water bodies, from large lakes to very small basins to river beds, that are being used by Piping Plovers. The intensive surveying since 1984 allowed us to identify the waterbodies that needed to be surveyed in the compressed 4-week period of the international census.

All previous surveys addressed only part of the species' range and have left open the question of whether the population changes observed were due to movement or real population change. This lack of information has made obtaining a clear picture of the species status difficult. The 1991 International Census has resolved those problems and given us our first complete look at the Piping Plover population.

The 1991 International Census was also carried out on the wintering grounds. It is unknown whether all of the winter areas of the Piping Plover have been located. A comparison of the number of birds counted in the breeding areas with the number counted in wintering areas will give us this information.

Identifying and describing nesting areas of the Piping Plover is essential for protection and management of those habitats. This is the first time that the entire species' range has been censused in a single breeding season, and the first time that some important sites have had a complete census. Critical Breeding Habitat (defined in Appendix 1) has been designated and outlined on 1:250,000 topographical maps based on information obtained from the 1991 census and previous surveys. This is a basis for application of habitat protection measures through The Critical Wildlife Habitat Protection Act, e.g. fencing to control cattle access.

SELECTION OF SITES

Study areas under consideration for this survey included all Saskatchewan wetlands south of the boreal forest, lakes along the southern edge of the boreal forest, and the south shoreline of Lake Athabasca in the boreal forest zone.

All available data of basins with previous Piping Plover use, and of areas previously searched for Piping Plover were compiled and evaluated to select basins for this census (Skeel 1990). Available data included earlier studies of Piping Plover locations (Renaud 1974, Renaud et al. 1979, Smith 1987), systematic surveys conducted since 1984 (Harris et al. 1985, Weidl 1986, Harris et al. 1987, Harris 1988a, Purdy and Weichel 1988, Harris and Lamont 1989, Johnson and Seguin 1989, Harris and Lamont 1990, Hjertaas 1991), and recent unpublished information on Piping Plover sightings and habitat (W.C. Harris, J.P. Goossen).

Topographical maps (1:250,000) were examined for waterbodies with no previous information. All waterbodies marked on the maps that were >2-3 km in length (or >approx. 200 hectares) were considered for the census. Habitat information for some of these basins was obtained from biologists familiar with the respective areas; those with habitat were selected. Many of those with no information were also subjectively selected, with preference for those located in areas of previous Piping Plover records. There are thousands of small basins under 40 ha (100 acres) that were not censused. Thus those censused represents only a sample of small basins available.

Wetlands that were selected for surveys included:
- those with a previous record of Piping Plover(s);
- those that had potential habitat; and
- a sample of small basins that were of unknown potential.

The survey work was divided into three categories: high priority basins, lower priority basins, and small waterbodies in the Missouri Coteau. Wetlands that were known to be unsuitable habitat were eliminated from the survey list.

The high priority basins included wetlands of recent (1984 or later) use or good potential for Piping Plovers, primarily as identified in surveys conducted since 1984. A few wetlands never surveyed or not recently surveyed but with previous records were included as high priority if located in a geographically favorable area. The high priority basins were divided into manageable blocks of wetlands, and these blocks were surveyed by biologists from Saskatchewan Wildlife Branch and Canadian Wildlife Service, or were tendered out to consulting biologists on a contract basis. Five wetlands were surveyed as part of a separate Piping Plover project (Harris and Lamont 1991), but within the guidelines of this survey. A total of 90 high priority wetlands were surveyed.

Lower priority basins included wetlands with historical records of Piping Plovers, wetlands surveyed since 1984 that had no plovers but were identified as having some possible habitat, and the selected wetlands for which there was no previous information. Although some of the lower priority basins were surveyed by biologists, most sites were surveyed by volunteers (over 80 individuals). These were enlisted through the local natural history societies, and the media. A majority of the volunteers were skilled bird watchers. A total of 208 lower priority basins were surveyed.

The Missouri Coteau was treated separately because it contains hundreds of small lakes, making visiting each impractical. Twelve of the larger lakes were included in the high priority blocks. Nine smaller lakes also had recent Piping Plover records, indicating that smaller waterbodies with a gravel beach and water do support plover. Suitability of these small shallow wetlands is unpredictable as water levels, and thus shorelines, vary considerably depending on spring run-off and winter snowfall.

An aerial survey of the Missouri Coteau in a small fixed-wing aircraft was conducted on May 8-10, 1991 in order to identify suitable wetlands. The pilot flew over all basins >40 ha (100 acres) and hundreds of smaller basins in the entire coteau between the Trans Canada highway and the USA border. Three observers, Dale Hjertaas, Wayne Harris and Laura Robinson, marked wetlands which appeared to possess sand or gravel beaches and water directly onto 1:50,000 topographical maps. The selected basins were grouped and assigned to five teams of surveyors. Surveyors included biologists from United States Fish and Wildlife Service, Saskatchewan Wildlife Branch, and Canadian Wildlife Service. A total of 200 smaller wetlands were surveyed in this area.

Sites are identified by name and 1:50,000 topographical mapsheet. In cases of unnamed sites, identification is by Universal Transverse Mercator (UTM) grid number, used in conjunction with the mapsheet. In many cases of smaller basins, UTM and name are used.

SURVEYING OF SITES

Surveys of the basins followed the schedule and procedure set out in the Guidelines for the 1991 International Piping Plover Census (Appendix 2). All surveys were conducted between May 26 and June 21, 1991 and focused on a count of the total number of adult Piping Plovers and the suitability of the habitat for the species. All basins designated as high priority were searched in the more preferred time period of June 1 to 14.

At basins of known recent use or with potential the entire basin was searched for habitat, and all stretches of suitable habitat were surveyed. In most cases for the lower priority basins all suitable habitat was surveyed. An estimated 95% or more of the total known habitat was censused. The few sections missed included a short stretch of Lake Diefenbaker (due to deteriorating weather; previous plover record here), of Lenore Lake (due to fading daylight), the immediate shoreline of Big Quill Lake (could not be reached due to extensive mudflats), portions of the very wide beaches of Killsquaw Lakes, and a short stretch of Big Muddy Lake. Possibly a few pairs were missed.

At each site surveyors reported all observations of breeding pairs and unpaired adults on the standardized Report Form for each Site Censused or Surveyed (Appendix 3). Only actual observed individuals were reported on the report form. If a pair was suspected an effort was made to find both adults, but pairs were recorded only where both adults were seen. In the final analysis a single adult with a nest or young was also considered a pair. Family groups and nests were recorded when located, but in most cases were not searched for in order to keep disturbance of nesting pairs to a minimum. Locations of all sighted adult Piping Plovers, with these identified as singles, pairs or flocks, were recorded on 1:50,000 topographic maps.

Habitat data, including suitability and potential suitability of the basin for Piping Plovers, and potential threats to the habitat were recorded on a Habitat Evaluation Form (Appendix 4). Beach areas were outlined on the 1:50,000 maps with the beach substrate marked as gravelly, gravel/sand, sand/silt or mud/saline. All surveyors received a detailed Survey Methodology handout (Appendix 5). Surveyors were urged to fill out survey reports and habitat forms in the field while or immediately after completing the survey, and in most cases did.

To minimize disturbance, observers were to spend no more than 5 minutes in any one Piping Plover territory. Also, surveys were not to be conducted under extreme conditions such as very hot, cold or rainy days.

Surveys were conducted by traversing suitable beaches on foot or all-terrain vehicles or, primarily in the case of river surveys, canoeing near suitable beaches. In some cases spotting scopes and binoculars were used to scan basins for suitable habitat, and to scan beaches from vantage points for Piping Plovers.

RESULTS AND DISCUSSION

The total count of Piping Plovers for Saskatchewan in June 1991 was 1162 adult birds. Of the 486 waterbodies surveyed, Piping Plovers were counted at 71, with the number of birds at each varying from 1 to 276 (Table 1). The number of pairs at each basin is noted, a pair being defined as 2 territorial adults presumed mated or one adult with a nest or young. All but 14 of the 71 basins had at least 1 pair, indicating potential breeding at 57 basins. Nests were not specifically searched for, but were found incidentally at many of these basins.

The distribution of Piping Plovers was not uniform (Figures 1 and 2). Locations within its range of the southern third of the province were clustered in the Missouri Coteau, along the eastern portion of Lake Diefenbaker, and in north-central (Quill and Houghton lakes) and north-west (Manito Lake) areas. The largest concentrations were found at 4 basins and in 1 geologically formed area:

Lake Diefenbaker	276 (arms of lake 223; body of lake 53)
Big Quill Lake	151
Manito Lake	111
Chaplin Lake	103
Missouri Coteau	345 (excluding Chaplin Lake)

The total count of 986 Piping Plovers in these 5 areas comprises 84.9% of the known Saskatchewan population. The above four basins, which meet criteria for designation as a Western Hemisphere Shorebird Reserve site, are also of known importance to other shorebirds, as are three other large lakes in the Missouri Coteau: Muddy, Old Wives, and Reed lakes (Dickson and Smith 1991).

A total of 221 basins yielded no Piping Plover in 1991, but either had habitat in 1991 or had the potential for habitat in some later year (Table 2). Many (28) of these have at least 1 previous record of Piping Plover(s). Although 1991 was a wet spring, five of the previous 7 years were dry, with several very dry years, and basins may have become temporarily unsuitable (Figure 3). Many basins with potential habitat are shallow, and as a result can become at least partially dry and overgrown with vegetation during prolonged drought years. Those same basins can again become suitable when flooding by heavy rainfall drowns vegetation and water recedes to again expose beaches. These changing conditions result in Piping Plover use to be somewhat unstable in affected areas.

A large number of basins were judged to have no potential for Piping Plover (Table 3). The 1991 census included a large sample of wetlands of unknown potential; many of these, as well as some previously searched basins, proved to be unsuitable. Unless there is reason to believe the habitat has changed, these basins should be excluded from future surveys for Piping Plovers.

Critical Breeding Habitat has been identified and mapped from the results of the 1991 census and previous surveys conducted since 1984 (defined and an annotated list in Appendix 3). A total of 62 wetlands were designated as having Critical Piping Plover Breeding Habitat. Sites were designated on the basis of recent use by breeding Piping Plover, with boundaries following the extent of suitable habitat as delineated by plover surveyors. Documentation of the results of the 1991 census and historical information (with references) are included in Appendix 1.

Appendix 1 can be referred to in the following discussion of Piping Plover distribution in Saskatchewan.

Lake Diefenbaker and South Saskatchewan River

The large population of Piping Plovers at Lake Diefenbaker is concentrated in the Thomson and Gordon McKenzie arms (to the Gardiner and Qu'Appelle Valley dams, respectively) of this huge reservoir. No Piping Plovers were observed in the western one-third of the body of the reservoir, with the numbers increasing towards the arms. Parts of Lake Diefenbaker have been surveyed since 1984, with the 1991 census being the first almost complete census (a short stretch along the body of the lake was missed due to weather).

Surveys of portions of the Thomson and Gordon McKenzie arms in 1984 (Harris et al. 1985) and in 1988 to 1990 (Harris 1988a, Harris and Lamont 1989, Harris and Lamont 1990) yielded consistently high counts of Piping Plovers, although their distribution from year to year varied to some extent. Surveys in the Riverhurst ferry area of the body of the lake in 1984 (Harris et al. 1985) and 1988 (Harris 1988a) consistently yielded Piping Plovers.

Water level can have a dramatic effect on Piping Plover habitat. By early July 1991 all of the beaches were flooded; only 20 adults and 7 young were found and it is highly unlikely any young survived (Harris and Lamont 1991). The results of a 28 June 1986 survey of Lake Diefenbaker yielded no Piping Plovers (W.C. Harris unpubl. data). Again, the high water level in the reservoir had flooded all beaches, effectively reducing habitat availability to zero. However, when water levels are low habitat appears to be excellent and large numbers of plovers have been recorded. Because spring runoff from the Rocky Mountains affects water levels in the reservoir, habitat is not consistently available throughout June.

Water levels also affect nesting Piping Plovers along the South Saskatchewan River from the Gardiner Dam to Saskatoon. A survey count of 44 Piping Plovers in 1988 (Purdy and Weichel 1988) dropped to 3 in 1990 (Harris and Lamont 1990) and 1 in 1991 (Harris and Lamont 1991). Considerable habitat was available in both years, but possible earlier flooding may have caused plovers that had started nests to leave.

The section of the South Saskatchewan River upstream from Lake Diefenbaker yielded only 2 plovers in a 1988 survey (Purdy and Weichel 1988), and the section downstream from Saskatoon yielded only 1 in a 1990 survey (a year of high water here, Hjertaas 1991); both sections had no Piping Plovers in 1991.

Quill Lakes - Last Mountain Lake area

Big Quill Lake has consistently yielded Piping Plovers, and regularly high counts, since annual surveys began in 1984. Counts vary from 43 in 1989, when less than 25% of the basin contained water, to a peak of 300 in 1985 (Harris and Lamont 1989). Although the water level has continued to decline since 1989, the population is contining to increase since the low count of 43 birds. This may be due to increasing vegetation growth closer the water's edge, where plovers are increasing their use (Harris and Lamont 1991).

Use at Big Quill Lake has been documented around the entire shoreline. In years of low water level, nesting beaches can be as far as 10 km from the water's edge, and are often in habitat at least partially vegetated (Harris and Lamont 1990). A July 1990 survey suggests this lake is also a main staging area for plovers, particularly along the south shore (Harris and Lamont 1990). This was documented by Renaud (1974).

Little Quill Lake is used by plovers to a lesser extent; there are only 5 specific locations (from the 1991 census) on the lake with breeding records.

Several basins to the southwest of the Quill Lakes support Piping Plovers, and Little Manitou Lake to the west has several records.

Last Mountain Lake had a peak count of 43 Piping Plovers in 1984 (Harris et al. 1985); only 9 were counted in 1991. The lake level had been low since 1987 (information from Sask. Water Corp.), enabling vegetation to encroach and shrink beaches, including those on points. Piping Plovers consistently use points on this lake. High water levels would flood points, but would also maintina beaches.

Manito Lake (also called Manitou Lake)

The entire shoreline of Manito Lake was surveyed for the first time in 1991, and yielded 111 Piping Plovers. There was an abundance of high quality habitat, much of it elevated and able to survive a moderate increase in lake level. A high portion of the best habitat was occupied, suggesting the area may be approaching its carrying capacity. However, there was considerable unused lower quality habitat. The distance of 6 nests, incidentally located, varied from 22 to 187 m from the water's edge. Partial surveys in previous years consistently yielded Piping Plovers (G. Wapple unpubl., Harris et al. 1985). Two small nearby basins also had several plovers in 1991.

Chaplin Lake

Piping Plovers consistently occur at this large lake in the northern Missouri Coteau, although population levels fluctuate. The peak count of 253 in 1984 in a partial survey (Harris et al. 1985) contrasts with the count of only 57 in a 1987 complete survey when water levels were low (Harris et al. 1989).

Use at the four basins of this lake varies between years, largely due to fluctuating water conditions. Two of the basins (Midtskogen Bay and the west (main salt mine) basin) usually have high usage, although Midtskogen Bay was little used by plovers in 1991 due to high water (Harris and Lamont 1991).

Missouri Coteau (excluding Chaplin Lake)

The Missouri Coteau consists of hilly terrain with hundreds of basins of varying size, many of these with gravelly beaches. A total of 345 Piping Plovers were counted here in 1991 scattered over 39 locations (Map 2).

The highest count of 42 plovers occurred at Old Wives Lake; a 1984 survey yielded a count of 39 (Harris et al. 1985). Five other lakes had counts over 20: Sandoff, East Coteau, Big Muddy, Fife and Willowbunch. These 5 basins have previous records but with much lower counts, likely because previous surveys were during the very dry period from 1984 to 1988 (Figure 3) when water levels were very low or dry. Several other basins (West Coteau, Edna, Elsie and McDonaugh) also had noticeably higher counts in 1991 than previous counts in 1990 (Hjertaas 1991). This is again likely due to the wet spring in 1991 replenshing water in basins that had become very low or dry. Montague Lake is an exception: the count was 12 in a 1984 survey of about half the shoreline (Harris et al. 1985) versus 4 in 1991.

Like other southern parts of the province, Missouri Coteau basins tend to be shallow and often small. As a result, the population level here appears to be unstable with fluctuations from year to year in response to water levels.

Other noteworthy locations and comments

Several other areas consistently support small populations of Piping Plovers. A population exists at Redberry Lake where surveys since 1984 indicate a declining population, with a peak count of 41 plovers in 1985 (Harris and Lamont 1990, 1991). Northeast of Saskatoon, in the Muskiki-to-Lenore lakes area, 43 plovers were counted in 1991 at 7 basins. Six of the 7 basins have previous records (the 7th has not been surveyed before), indicating consistent usage.

Another area that has shown consistent use by a small population is in the vicinity of the Great Sandhills of southwest Saskatchewan. Seven plovers were counted in 1991 at 2 basins (one with previous records), and Piping Plovers were noted at a third lake (Antelope) in 1986 (peak count of 14, Weidl 1986), 1988 and 1989 (W.C. Harris pers. comm).

Scattered historical records indicate that wetlands in the western portion of the plover's Saskatchewan range (South Saskatchewan River to North Battleford; see Table 2, mapsheets 72N and 73C) supported Piping Plover during the 1970's (Skeel 1990). These basins tended to be low or dry and overgrown with weedy annuals in 1991. With a change in conditions they may again be used.

On Lake Athabasca, at the Archibald River, there are reports of a single plover in 1981, and a single and 1 pair with flightless young in 1982 (Adam 1984). A single was photographed by a Conservation Officer from Uranium City on 1 July 1989 at the mouth of the Archibald River (Goossen 1990b). A complete survey of the south shore of Lake Athabasca in 1991 yielded no Piping Plovers, and therefore this area does not appear to be used consistently.

SITE MANAGEMENT RECOMMENDATIONS

Locations, identified threats to the habitat and recommended management actions are listed below (numbering of sites follows Table 1.). The number of Piping Plovers in 1991 is given in (). The individual basin actions have been priorized, with the most important listed first.

Threats were identified by surveyors (referenced in Appendix 1) unless otherwise noted. Because many surveyors were seeing basins for the first time, problems are usually identified on the basis of one visit. In most cases, therefore, further investigation is the most appropriate action and has been called for. This is to recognize that action such as fencing requires substantial time and money investments and must be used in highest priority areas.

High priority sites

46. Lake Diefenbaker (276 PIPL) and
45. South Saskatchewan River: Gardiner Dam to Saskatoon (1 PIPL; 44 in 1988)

- Lake Diefenbaker has the largest population of Piping Plovers in North America, with 5.0% of the total population (7.9% of the prairie breeding population, S. Haig pers. comm).

- The most significant and critical threat is the extreme and rapid increases in water level during the breeding season. Water level increases sometimes rise above beaches, flooding nesting or family groups of Piping Plovers and their habitat.

- At some locations along Lake Diefenbaker cattle use beaches and pose a threat. Human activity (vehicles, house boaters, dogs, beach use) also poses a threat at sporadic locations along the shore.

ACTIONS RECOMMENDED: (1) Formation of a working group to draw up a plan of water level manipulation that would fit the needs of the organizations involved and of Piping Plover habitat management on Lake Diefenbaker and the South Saskatchewan River downstream from the Gardiner Dam. The working group would include Sask Water Corporation, other water management agencies with an interest in Lake Diefenbaker, wildlife agencies and perhaps local communities (e.g. resorts).

(2) Investigate the areas of Lake Diefenbaker that have been designated as critical habitat that are threatened by cattle use. Investigate feasibility and value of fencing off nesting habitat or other cooperative project with landowner.

(3) Signage at areas of human use on Lake Diefenbaker that are also used by Piping Plovers encouraging the public to help maintain wildlife habitat by not disturbing Piping Plover habitat during the nesting season.

(4) In a low water year, survey the portion of the South Saskatchewan River that includes Critical Piping Plover Habitat to determine use. The needs of Piping Plover habitat management here will then be better understood.

64. Redberry Lake (21 PIPL)

- The concentration of gulls is a potential threat to Piping Plovers. Productivity of Piping Plovers has been low in comparison to other areas (W.C. Harris pers. comm).

ACTION RECOMMENDED: Investigate why productivity is low, and in particular whether the gull population is having an impact. Determine what, if any, strategy can be used to improve productivity.

67. Manito Lake (111 PIPL)

- Threats from cattle and ATVs (very minor ATV use in plover habitat). Cattle occur on almost all areas of the shoreline. Use by cattle is generally light or moderate, but sometimes heavy. Potential for nest trampling exists, and suitability of habitat is reduced where heavy trampling occurs.

ACTION RECOMMENDED: Investigate feasibility and value of fencing or other cooperative project with landowners at areas designated as Critical Piping Plover Habitat. Action should be emphasized in areas of plover concentrations: the mainland shoreline at the SE bay of the lake, the west shore of the south half of the lake and along the north shore.

27. Willow Bunch Lake (31 PIPL)

- Threat from easy vehicle access to two areas on the south side where nests were found.

ACTION RECOMMENDED: Signage at access points encouraging the public to help maintain wildlife habitat by not using vehicles on areas designated as Critical Piping Plover Habitat during the nesting season; investigate value of cooperative project with landowners.

11. Channel Lake (19 PIPL)

- Threat from cattle and vegetation encroachment.

ACTION RECOMMENDED: Investigate feasibility and value of fencing off areas designated as Critical Piping Plover Habitat or other cooperative project with landowner(s).

9. 705 056 (15 PIPL)

- Cattle have access to the entire lake.

ACTION RECOMMENDED: Investigate feasibility and value of fencing off Critical Piping Plover Habitat or other cooperative project with landowner.

15. 540 279 (11 PIPL)

- Cattle are a threat; landowner interested in wildlife.

ACTION RECOMMENDED: Investigate feasibility and value of fencing off Critical Piping Plover Habitat or other cooperative project with landowner.

23. Coronach Reservoir (5 PIPL)

- Threat from fluctuating water level; also from vegetation encroachment at the south end (plovers sighted here), and possibly from a gull colony on the main body of the reservoir at 670 355.

ACTIONS RECOMMENDED: (1) Secure a management plan with the dam operators that protects the Critical Piping Plover Habitat during June and July.

(2) Investigate eliminating vegetation at the south end of the reservoir since this area would provide good plover habitat. Beaches could be maintained by periodic flooding.

53. Big Quill Lake (151 PIPL)

- Low water level is a threat to Piping Plover habitat. Over the last 7 years encroachment by vegetation has been occurring, and long distances from gravelly nesting habitat to the water's edge are detrimental to productivity (W.C. Harris pers. comm.).

ACTION RECOMMENDED: Investigate to what extent Piping Plover productivity is affected by vegetation encroachment and long distances of nesting habitat to the water's edge. Continue productivity studies when the water level again rises and distances shorten. A rapid rise in water due to wetter weather could cause little nesting habitat to be available because of the years of vegetation encroachment, and habitat management may need to be considered.

Lower priority sites - sites with <10 Piping Plovers where cattle have been identified as a threat.

ACTION RECOMMENDED at the following sites: Investigate feasibility and value of fencing off Critical Piping Plover Habitat or other cooperative project with landowner.

6-8. Dryboro Lake (5 PIPL), 650 075 (2 PIPL), Burn Lake (4 PIPL)

- Cattle are a threat at all three; PFRA pastures.

12-13. 840 020 (8 PIPL), 842 003 (2 PIPL)

- Cattle are a threat at 840 020, and potentially at 842, 003.

14. 846 992 (4 PIPL)

- Cattle are a threat; PFRA pasture.

21. Lonetree Lake (2 PIPL)

- Cattle are a threat: cattle were on the beach at the best habitat, and there was cattle sign at most suitable sites. There is potential for a larger Piping Plover population.

28. Edna Lake (7 PIPL)

- Threat from cattle at one area on the north side, which was heavily trampled, and from a large gull colony. Area on north side has fences which should exclude cattle.

ACTIONS RECOMMENDED: (1) Contact landowner to determine whether fencing on north does exclude cattle; investigate feasibility and value of more fencing (or repair) if required, or other cooperative project with landowner.

(2) Investigate the impact of the gull colony on plover productivity, and what, if any, strategy can be used to improve productivity.

44. Tramping Lake, south end (2 PIPL)

- Threats from cattle and people. Heavy cattle use north of the regional park, on the west side and on the NE side of the southern section of the lake; occasional use on the south side. Proximity of the park may result in people walking the beach.

ADDITIONAL ACTION RECOMMENDED: Signage encouraging the public to help maintain wildlife habitat by not disturbing Critical Piping Plover Habitat during the nesting season.

55. Basin Lake (4 PIPL)

- Cattle are a threat on the north and east shores, where pastures extend to the shoreline. There is little good beach habitat.

ADDITIONAL ACTION RECOMMENDED: Investigate benefits of addition of suitable substrate on the northern peninsulas.

57. Middle Lake (4 PIPL)

- Potential threat from cattle.

61. Lenore Lake (9 PIPL)

- Threat from cattle on the north side (some activity), and from vehicle use of beaches along the east side.

68. West Reflex Lake (17 PIPL, 5 in Saskatchewan)

- Threat from cattle on west and north sides (light grazing). A small number of bike and ATV tracks were found on much of the beach. Plover occurred near the recreatonal beach at the SW end of the lake (Alberta).

ADDITIONAL ACTION RECOMMENDED: Contact landowners with Critical Piping Plover Habitat and request voluntary restriction of bike and ATV use on beaches during the nesting period; investigate signage.

Other lower priority sites with <10 Piping Plovers in 1991

2. 613 345 (7 PIPL)

- Garbage at the salt end of the lake where plovers were concentrated is a threat to the habitat.

ACTION RECOMMENDED: Investigate signage to discourage disposal of garbage, and contacting the landowners for cooperative action.

70. Killsquaw Lakes (4 PIPL)

- Potential threat from pollution from salt plant. Salt plant is located about 500 m from northern Critical Piping Plover Habitat polygon.

- Threat from vehicular traffic of local farmer at north end of south section. This traverses along a large polygon of Critical Piping Plover Habitat at the south end of Killsquaw Lakes.

ACTIONS RECOMMENDED: (1) Investigate whether salt plant is affecting Piping Plover habitat.
(2) Contact landowner(s) with suggestion to continue use of one track along this section of the lake.

17. Bliss Lake (3 PIPL)

- No threats were noted. It was suggested that added gravel would improve the habitat for Piping Plover. This could be investigated.

**. Landis Lake (2 PIPL in 1990; Table 2. #192)

- Potential threat from 3 water control structures (Hjertaas 1991).
- Potential threat from small garbage dump on NE side.

ACTIONS RECOMMENDED: (1) Investigate whether water management is affecting Piping Plovers; contact water manager.
(2) Investigate impact of small garbage dump.

**. Coal Mine Lake (0 PIPL; Table 2. #97)

- No threat has been identified; there are extensive beaches not being used.

ACTION RECOMMENDED: Investigate why beaches at this lake are not being used by Piping Plovers for nesting.

**. Castlewood Lake (0 PIPL; Table 2. #189)

- No threat identified. Habitat can possibly be improved by pumping water from the east to west basin (Hjertaas 1991).

ACTION RECOMMENDED: Investigate the benefits of the above action.

Sites where minor problems have been identified

NO ACTION IS RECOMMENDED at the following sites.

4. East Coteau Lake (23 PIPL)

- Some cattle trampling along SE shore, but not serious.

10. Shoe Lake (4 PIPL)

- Potential threat from cattle. No details given.

16. Lake of the Rivers (6 PIPL)

- Some cattle activity on small areas of suitable habitat.

18. Skyeta Lake (2 PIPL)

- Potential threat from cattle; threat from vegetation encroachment.

19. Oro Lake (1 PIPL)

- Threat from cattle and vegetation encroachment.

29. McGrath Lake (1 PIPL)

- Potential threat from cattle. Threat from vegetation encroachment, and possibly ATV use (tracks on the limited gravel habitat).

30. 215 590 Salt Lake (1 PIPL)

- Potential threat from cattle.

32. McDonaugh Lake (11 PIPL)

- Potential threat from cattle.

34. 514 656 (3 PIPL)

- Potential threat from cattle. No disturbance of shore in 1991.

37. Old Wives Lake (42 PIPL)

- Cattle are a threat to the habitat on the NE and north (heavy activity in these areas); however, Piping Plovers were primarily found on the south. The lake has been mostly dry for several years, and has become vegetated. Many of the old beaches have been covered with blowing silt.

42. Freefight Lake (5 PIPL)

- Threat from cattle (SDA pasture). Much unused habitat along the south shore.

43. Ingebright Lake (2 PIPL)

- A salt mine on the lake does not appear threatening to date.

47. Last Mountain Lake (9 PIPL)

- Potential threat from cattle as most of the suitable habitat is accessible to cattle; impact considered light as generally the cattle had a tendency to follow the same path to and from the water's edge. People cause little disturbance because most habitat is away from cottage areas. Water level increase is not a threat because even with a considerable increase suitable habitat would remain.

48. Kutawagan Lake complex (8 PIPL)

- Potential threat from cattle (PFRA pasture), but little cattle activity noted on nesting beaches.

RECOMMENDATIONS TO ENSURE THE CONSERVATION SUCCESS OF THE PROJECT

1. Determine and map critical Piping Plover habitat based on defined criteria. (This has already been done: see Appendix 1.)

2. Transfer the above information to the master Mylar maps maintained by Saskatchewan Parks & Renewable Resources so that this information will be widely available when conservation decisions are being made concerning specific locations. (This is currently being done.)

3. Update critical habitat polygons as previously undesignated areas are located.

4. Follow through on the actions recommended for specific locations that have been identified as having a threat to Piping Plover habitat. (See above section.) These actions need immediate attention.

5. Productivity studies, such as those that have been ongoing for several years (P. Goossen, W. Harris pers. comm.), should be continued at selected locations. These could include the locations of concentration: Lake Diefenbaker, Big Quill Lake, Lake Manitou, Chaplin Lake, and a sampling of smaller basins in the Missouri Coteau.

6. Transfer the Piping Plover Critical Habitat information to the Geographic Inventory System (GIS) that is currently being integrated in many areas of resource management departments of government and industry in Saskatchewan. This will ensure wide access.

7. Contact all landowners where action to manage habitat has been recommended. This could be done during a visit to assess the threat and the need for action. Although not always identified in the above section as needing immediate attention, it could be considered as a useful step. Information on the Piping Plover, its habitat needs, the (potential) threat on their property, and suggestions on how they can help protect their plovers needs to be included.

8. Revisit all sites, or sites where it is considered necessary, over a 4 year period to follow the Piping Plover population. Determine whether the threat has been reduced or eliminated.

9. Consider, as a future step, contacting all land owners with Critical Piping Plover Habitat. They may be more interested in protecting plover habitat if they are aware of its significance. If plover numbers further decline, a "Plover Protector" program could be developed whereby landowners are identified as such and protect plover habitat on their property.

10. The need for another international or provincial census should be assessed in 4 or 5 years. If there is another complete provincial census, all the basins in Tables 1 and 2 should be included.

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APPENDIX 1: Sites designated as Critical Piping Plover Habitat.

Sites were designated on the basis of recent use by breeding Piping Plovers. Criteria for designation as Critical Piping Plover Habitat in this survey were: if the beach was used by 1 or more pair in at least one year since 1984, and it seems reasonable to expect repeat use. Sites surveyed for Piping Plovers in 1991 were evaluated first, then sites not used in 1991 but with previous data were evaluated. Use by a single Piping Plover was not considered for critical habitat designation. At a few basins with localized beaches meeting the above criteria, additional localized habitat with no records of Piping Plover were also designated as Critical Habitat on the basis of proximity and similar substrate.

Unnamed sites are referred to by their Universal Transverse Mercator (UTM) grid number, which is used in conjunction with the mapsheet. In some cases the precise location of Piping Plovers is given in the text using the UTM grid reference (e.g. 561600 5437300). The sites are ordered sequentially (prefaced by mapsheet); numbering of sites follows Table 1.

For each site a summary of recent Piping Plover use on which designation is based is followed by other relevant information. The Critical Habitat (also referred to as a polygon) has been mapped on 1:250,000 topographical maps. A polygon was drawn on the map as all or part of the wetland such that it included plover locations recorded since 1984, and suitable habitat as identified in 1991 and previous surveys. Copies of the maps are included at the end of this report, and this information is being digitized onto the Geographic Information System at Saskatchewan Parks and Renewable Resources.

Observers are referenced by name. The 1991 observers were involved in the 1991 International Census. The 1990 observers are from Hjertaas (1991), unless otherwise referenced. Other observations are from separate studies or unpublished field notes and are referenced.

72 H/1

2. 613 345. Unnamed site.

1991. (Lash) 7 Piping Plovers, including 3 pairs (1 nest with 4 eggs). The birds are widely distributed around the lake but noted as more concentrated at the salt end of the lake.

The area of adjacent basin 613 353 is designated as part of this critical habitat as 1 bird from 613 345 was seen flying to it. The 1:250 000 map also indicates them as one basin. The whole of these two basins is designated critical habitat because the birds are widely distributed along the basin shore.

3. Sandoff Lake. 615 375.

1991. (Dauphine) 25 Piping Plovers, including 8 pairs, widely distributed along the lakeshore.

1990. (Bjorklund) 1 Piping Plover foraging on a gravel beach at 561600 5437300.

The whole basin has been designated because Piping Plovers are widely distributed along the shoreline and the basin is small.

4. East Coteau Lake.

1991. (Harris) 23 Piping Plovers including 10 pairs (8 with nests and eggs, 1 with a fresh scrape and 1 courting).

1986. (W.C. Harris unpubl.) 1 Piping Plover. Habitat rated poor.

The whole basin west of the dam is designated because the Piping Plovers are distributed around this part of the lake and Harris mentions there is still good habitat available.

72 H/1 and 2

5. West Coteau Lake.

1991. (Harris) 7 Piping Plovers including 3 pairs (2 with nests of 4 eggs, and 1 courting). Most of the beaches are suitable although the majority are <10 m wide this year because the water is high. The Piping Plovers are on points around the lake.

1990. (Bjorklund) 0 Piping Plover. Water low, moderate potential.

1986. (W.C. Harris unpubl.) 2 Piping Plovers. Habitat rated fair.

The whole basin east of the dam is designated because the habitat is described as suitable although wet this year.

72 H/11

6-8. Dryboro-Burn Lake complex.

1991. (Goossen):
Dryboro 635 075: 5 Piping Plovers, including 3 pairs (1 nest). Extensive habitat in the east basin. 1 pair also set up its territory in the west end of the lake. Good habitat indicated all along the south shore.

650 075: 2 Piping Plovers, both territorial. No evidence of nesting but the basin is obviously used by Piping Plovers and is close to nesting areas.

646 076 (Table 2. #52): 2 Piping Plovers, considered to be the same birds already counted on Dryboro. The basin is obviously used by Piping Plovers and is very close to breeding grounds.

Burn Lake 660 070: 4 Piping Plovers including 2 pair (2 nests).

Piping Plovers and habitat are widespread around the complex so the 4 basins are designated in their entirety.

9. 705 056. Unnamed site south of Ormiston.

1991. (Goossen) 15 Piping Plovers including 7 pairs (2 nests).

The whole basin is designated because it is fairly small and is used by a large population.

10. Shoe Lake. 741 095.

1991. (Goossen) 2 pairs of Piping Plovers both at the narrowing near the north end of the lake (1 nest). Also 1 bird reported (Hesterman) on or near the dyke, east of the sodium sulphate plant. (The latter is not recorded in the 1991 count as it may be a double count.)

1990. (Bjorklund) Not surveyed because permission denied.

Only the area of the nesting sites has been designated as no other suitable habitat was indicated.

11. Channel Lake. 825 855.

1991. (Goossen) 19 Piping Plovers including 5 pairs.

1990. (Bjorklund) 2 Piping Plovers thought to represent 2 pairs, at 483250 5485750 and 482500 5485300.

There is a fairly large population of Piping Plovers concentrated on the available habitat on the south shore of the eastern basin. As the lake is small, all the eastern basin is designated except the arm at the northeast where there has been no habitat noted and no plovers.

12-13. 840 020 and 842 003. Unnamed complex.

1991.:
840 020. (Barry) 8 Piping Plovers including 3 pairs (1 nest). Habitat of this very small basin very good all around.

842 003. (Goossen) 2 Piping Plovers. 2 beach areas marked on the map. This very small basin is adjacent to 840 020 and obviously used by Piping Plovers.

The 2 basins are designated together on the map because they are very close to each other and both are used by Piping Plovers.

14. 846 992. Unnamed site just south of 842 003.

1991. (Goossen) 2 pairs of Piping Plovers (1 nest).

The basin is small and the shoreline is rated as all good habitat, therefore the whole basin is designated.

72 H/13

15. 540 279. Unnamed site.

1991. (Bartlett) 11 Piping Plovers including 5 pairs (2 nests). Mostly gravel/sand beaches, from 10-30 m wide. Large beach areas. Water level low. Potential for more birds.

The entire basin is designated due to the number of birds, its small size and the habitat evaluation.

72 H/12 and 13

16. Lake of the Rivers.

1991. (Weidl) 6 Piping Plovers including 2 pairs (1 nest). Habitat described as plenty of gravel shoreline and an estimate of 30% of the lake as Piping Plover habitat.

1990. (Bjorklund) 1 Piping Plover located at 446900 5528700. A complete survey of suitable habitat was done. Most of the lake is dry and vegetated but there are gravelly areas under the vegetation.

1989. (W.C. Harris unpubl.) The lake was dry.

In spite of Weidl's evaluation, only the beaches where Piping Plovers were found and the adjacent areas that were evaluated as good habitat have been designated because of the lack of evidence of use of other areas by plovers.

72 H/13 and 14

17. Bliss Lake. 633 135.

1991. (Palmer) 3 Piping Plovers: 1 pair (1 nest with 4 eggs) and 1 territorial single.

1990. (Bjorklund) 0 Piping Plover. Eastern shore only searched by scope. Shorelines vegetated to the high water mark; water levels low and some gravel beaches.

The whole basin is designated because Piping Plovers are widespread and, in 1991, there are good beaches all around.

72 H/14

18. Skyeta Lake. 735 197.

1991. (Goossen) 1 pair of Piping Plovers nesting on the peninsula at the very south of the lake.

There are no previous data for this basin so the only area designated is the nesting area.

20. 842 162. Unnamed site.

1991. (Hjertaas) 1 pair of Piping Plovers on a spit at the north end, and 1 unexplored island with potential. The south end of the basin is thought to have potential.

The basin is fairly small and, in view of the above information, the entire basin is designated.

72 H2

21. Lonetree Lake. 355 290.

1991. (Burke) 1 pair of Piping Plovers seen on the north west shore, south of the regional park. At least 3 similar areas around the lake.

1990. (Bjorklund) 0 Piping Plover. Lake surrounded by sand and boulder beaches. Boulders absent from the beach and therefore best potential at Clear Lake Park and the extreme SE tip.

1986. (W.C. Harris unpubl.) 0 Piping Plover.

There are beaches all around therefore all but the northern tip (where recreational use at Clear Lake Regional Park may prevent use) has been designated.

22. Big Muddy Lake.

1991. (Schmidt) 26 Piping Plovers, including 8 pairs. The beaches used are mainly on points, and mostly in the eastern arm of the lake. One stretch on the east of the western arm and Appleby Island were not surveyed.

1986. (W.C. Harris unpubl.) 2 Piping Plovers in a partial survey. Habitat rated fair (3 out of 5).

1965. (Sask. Museum of Natural History collection) 2 Piping Plovers.

All of the east half of the lake is designated following beach mapping and locations of Piping Plovers by A. Schmidt. The other 2 areas designated (the point at Kooh Bay and the segment west of this) had pairs in 1991 and one had a pair in 1986. The unsurveyed areas of the basin have not been designated at the present.

73 H/3 and 4

23. Coronach Reservoir. 676 311.

1991. (Goossen-Barry, Burke). 5 Piping Plovers, including 1 territorial pair (1 nest). There appears to be plenty of habitat due to the low water levels. A pair and single were located on the NW side of the dam and 2 birds at 670 355.

The gravel pads on the northwest and northeast of the dam have been designated as critical habitat. The site of the 2 birds at 670 355 was not designated as critical habitat because the water level was unusually low and the situation is unlikely to occur regularly.

72 H4 and 5

25. Fife Lake.

1991. (Harris) 29 Piping Plovers, including 9 pairs (7 nests and 2 pairs courting).

1987 to 1989. (W.C. Harris pers. comm.) Piping Plovers every year.

1986. (W.C. Harris unpubl.) 7 Piping Plovers. Habitat rated good.

1940's. (Smith 1987) Reports of 1+ territorial pairs.

The whole basin is designated because the beaches are evaluated as very good, the plovers are distributed around the lake and there are many unoccupied beaches.

72 H5

26. Montague Lake.

1991. (Harris) 4 Piping Plovers including 1 pair (nest with 4 eggs).

1984. (Harris et al. 1985) 12 Piping Plovers, estimate of 23.

Harris comments that the wider beaches are the only ones used. The south-east of the basin is not used, probably because the beaches are narrower. Therefore the parts of the lake with beaches of between 10 to 30 meters are the only areas designated.

72 H5 and 6

27. Willow Bunch Lake.

1991. (Weidl) 31 Piping Plovers, including 16 pairs (6 nests) distributed along the lake.

1984. (Harris et al. 1985) 7 Piping Plovers counted over 47% of the shoreline. Population estimate of 15.

The designated areas include all sightings locations and all good beaches.

72 H7

28. Edna Lake. 060 725.

1991. (Hjertaas) 7 Piping Plovers including 4 pairs (4 nests).

1990. (Bjorklund) 1 pair with a nest at 506100 5472900.

All good habitat overlaps with the sightings and is described as being only on the east and west shore. The designated area follows the outline of the good habitat.

30. Salt Lake. 215 590.

1991. (Goossen) 1 adult male.

1990. (Bjorklund) 1 pair at 520700 54462500, on a small gravel spit.

The area with the pair is designated, as well a beach south of the sighting because it is adjacent and described as one of the only beaches suitable for nesting. The south end beaches are estimated to be too narrow and the lake too salty otherwise.

31. Elsie Lake. 310 695.

1991. (Hjertaas) 15 Piping Plovers including 6 pairs (4 nests).

1990. (Bjorklund) 2 pairs of Piping Plovers, 1 on each of 2 sandy points: 530900 5469500 and 530950 5469200.

The entire basin is designated as it is very small and has 6 pairs.

32. McDonaugh Lake. 335 712.

1991. (Hjertaas) 11 Piping Plovers, including 4 pairs (1 nest).

1990. (Bjorklund) 1 Piping Plover appearing very agitated at 533850 5471700; nesting suspected. Shorelines are gravel at high water level with bands of fine sand at low water.

The birds are more concentrated in the east portion of the lake but one was seen in the west. The habitat is good all around so the entire lake is designated.

**. Marjorie Lake. 315 684. (Table 2. #103.)

1991. (Hjertaas) 0 Piping Plover.

1990. (Bjorklund) 1 territorial adult at 531400 5468100 on a gravel spit. A pair is suspected. The whole lake is ringed by gravel but the beach is vegetated to within 4 feet of the water. Some beach is exposed and a gravel bar provides good habitat. The lake has potential to support more Piping Plovers.

The entire lake is designated on the basis of the behavior of the Piping Plover as well as habitat information. The basin is very small and close to Elsie Lake.

72 H/8

34-35. 514 656 and Karl Lake complex.

1991:
514 656 (Peters): 3 Piping Plovers on this very small basin.

Karl Lake 517 656 (Peters): 2 Piping Plovers (1 pair). Very small basin.

The entire complex is designated because there was 1 pair of plovers at Karl Lake and 3 birds at 514 656, and the basins are adjacent and very small. The birds may move back and forth between the basins.

72 I/4

36. Frederick Lake. 435 425.

1991. (Bartlett-Crofts) 12 Piping Plovers including 5 pairs (4 nests), mostly occupying the NE corner of the lake with 1 pair at the SW.

The NE of the lake as well as the SW corner have been designated because these areas cover the pair distribution and the habitat is evaluated as good.

72 I/4 and 72 J/1

37. Old Wives Lake.

1991. (Harris) 42 Piping Plovers including 17 pairs (17 nests). Most of the birds are on 72I/4. Many of the old beaches are covered with blowing silt.

1986. (Haig 1986) 4+ Piping Plovers.

1984. (Harris et al. 1985) 39 Piping Plovers (72% of the shoreline surveyed); estimate of 50.

All the designated shoreline is wide because the 42 1991 records are much closer to the lake center than the previous ones. There are concentrations of birds on the east shore, the west edge of the easternmost south bay and a scattering of birds along the south shore. The NE part of the lake was not surveyed in 1984, 1986 or this year because the water level was too low. It is not included as critical habitat because it is an unknown. The north shore was surveyed totally in 1984 with the western edge resurveyed in 1986. The birds are more scattered here and the areas of the sightings have all been designated. In 1991, 4 pairs nested around 2 of the islands in the lake and one pair along a small basin on the Isle of Bays. The area of the islands is therefore also designated.

72 J/7

41. Chaplin Lake.

1991. (Harris and Lamont 1991) 103 Piping Plovers, including 51 pairs (46 nests), all found in the north half of the lake. Most of the birds are concentrated in the west (main salt mine) basin, particulartly along the north and SE shores (including the west shore of the island). There are 3 sites with records in Midtskogen Bay (1 at the NW and 2 towards the inlet to the middle basin), and scattered sites in along the north and east shore of the east basin (south to the DU dyke separating the north half of the lake from the south basin). The south basin had no expposed beaches due to a combination of vegetation encroachment and higher water. All of the basins had water for the first time since 1984.

1990. (Harris and Lamont 1990) 66 Piping Plovers (27 nests), all but 3 found in the north half of the lake. This is the first time since 1984 that all the basins had water. The plovers were concentrated on the basins with the most water: the eastern part of the west (main salt mine) basin, Midtskogen Bay, and the eastern shore of the east basin. There were also a few scattered records: 1 in the northwest of the west basin, 1 on the west shore of the east basin and 3 on the east shore of the south basin. The south basin was mostly vegetated.

1987. (Harris et al. 1987) 57 Piping Plovers in a survey of the entire lake. Most of the lake was dry, likely accounting for the population drop from 1984. Piping Plovers will use areas of no water but their reproductive success is much reduced. There were 7 sites on the east of the west (main salt mine) basin, a large concentration in Midtskogen Bay, 3 sites clustered on the east shore of the east basin, and a cluster of 4 sites on the NE of the south basin (also one brood on the SE end of the DU dyke). Most (63%) birds were on basins that had some water in June.

1984. (Harris et al. 1985) Peak count of 253 Piping Plovers on a survey of 48% of the shoreline. The water level was very low. Plovers were found along most of the shoreline surveyed. In the west (main salt mine) basin there were concentrations along the south and east, but only 5 sites west of the westernmost dam. The north shore was not surveyed. In Midtskogen Bay plovers were located along the north and east, particularly in the inlet to the east basin. Most of the east basin was not surveyed; the short section along the west shore that was yielded only 3 sites. In the south basin plovers were found along most of the north and west shore that was surveyed. The eastern shore of the south basin and southern third of the west shore was not surveyed.

There are many areas designated on Chaplin Lake. The population and its distribution fluctuate widely, likely in response to water conditions. The basins are discussed separately below.

West basin. (main salt mine basin)
The whole basin is designated because there have been concentrations of Piping Plovers east of the westernmost dam for many years and every year the western part is surveyed, it yields a few more locations of birds.

Midtskogen Bay.
All of this is designated as it is a heavily used nesting area for plovers. In 1984, the birds were concentrated on the north and east shore, but concentrations were on the south shore in 1987 and 1988.

East basin.
The north and east shores of the east basin are designated because there was a scattering of pairs in 1990. The parts of the western shore with sightings are also designated.

The south basin.
Most records of use were in 1984, which is the only year until 1990 when it had water. In 1990 and 1991 plovers were concentrated at other basins with more water. In 1987 the eastern shore of this basin was surveyed for the first time; in view of the numerous 1984 records, there may be more areas of use during high population years. The area designated as critical habitat includes all of the 1984 and later records (except the one along the DU dyke, which is not considered regular habitat).

72 K/6

42. Freefight Lake.

1991. (M. Gollop) 5 Piping Plovers including 2 pairs, clustered on the northeast shore. A good beach at the point where the spring flows in on the NE corner, and an unused gravel beach along the east half of the south shore. Habitat is mainly along the high water mark and would be secure under most water regimes.

1984. (Harris et al. 1985) 2 Piping Plovers, no location.

1982. (C. Harris, unpubl., from Smith) 1 pair.

The whole eastern part of the lake is designated because that it where there are records of Piping Plovers and good habitat in 1991.

43. Ingebright Lake. 190 815.

1991. (M. Gollop) 2 single Piping Plovers, 1 leaving a nest with 4 eggs at SW end of lake, the other at the N end north of the dam. Some potential habitat along the S shore was not surveyed. The lake was walked from the south end to the salt mine along the west shore. The sparse plover habitat is mainly scattered along the SW end.

1986. (Weidl 1986) 0 Piping Plover. West and north end rated fair.

The southwest end of the basin has been designated critical habitat because this area is rated the best habitat. There is no evidence of nesting at the north end.

72 K/1 and 8

**. Antelope Lake. (Table 2. #133.)

1991. (Gollop) 0 Piping Plover.

1988 and 1989. (W.C. Harris pers. comm.) Piping Plovers present.

1986. (Weidl 1986) 14 Piping Plovers present on July 17, 3 in the ENE corner, 10 in the NE, and 1 on the W side 1 km N of the regional park. Excellent habitat areas all around the lake due to low water.

There is no definite breeding record but the consistent use and the number of 14 would seem to indicate that some birds are breeding. The beaches mapped as good habitat during the 1991 survey, which includes the NE, and the W (both N and S of the regional park) are designated critical habitat.

72 N/15

44. Tramping Lake.

1991. (Weerstra) South end was surveyed: 1 pair of Piping Plovers, acting territorial. No previous data.

1991. (Finley) North end was surveyed: 0 Piping Plover but habitat present in the form of sand/silt spits projecting from saline flats. Possible potential for plover the length of this very long valley.

The beach occupied by the plovers on the southern portion of the lake is wide so it is all designated.

**. Opuntia Lake. (Table 2. #148.)

1991. (Weerstra) 0 Piping Plover. Lake dry except minor puddles near centre. Well vegetated at north and south and along edges; some mudflats in middle. No habitat without drastic changes in water level over a few years.

1986. (W.C. Harris unpubl.) 2 Piping Plovers, habitat rated fair.

1984. (Harris et al. 1985) 0 Piping Plover.

1979. (Renaud et al. 1979) 2 Piping Plovers with young.

1979. (G. Wapple unpubl. report to American Birds) 7 young and an estimated 6 adults on the west side, and 2 possibly breeding Piping Plovers on the east side.

1972. (Renaud et al. 1979) 1 Piping Plover.

Opuntia Lake has not been designated as critical habitat. However, the lake should be re-evaluated in the future after changes in water levels occur to again creat suitable habitat.

72 O and 73 B

45. South Saskatchewan River: Gardiner Dam to Saskatoon.

1991. (McAdam, from Harris and Lamont 1991) 1 Piping Plover. The habitat consists mainly of sand bars varying in size. Most bars were underwater until late May and became exposed when the water level dropped. Water level changes are extreme and occur quickly.

1990. (Harris and Lamont 1990) 3 Piping Plovers, 2 singles in June and 1 in July. 1 of the June adults may have lost its nest due to an increase in water level (4-32-6-W3)). It is interesting to note that the 1990 locations are very close to 1988 observations on non-territorial birds by Purdy and Weichel (1988).

1988. (Purdy and Weichel 1988) 44 Piping Plovers. One below the Gardiner Dam, the remaining 43 scattered the entire length from near Outlook almost to Saskatoon.

Although the 1988 survey found 17 pairs, few acted territorial. Scrapes were only found in 5 locations. Surveys in the high runoff years of 1990 and 1991 did not find significant use by plovers as most sandbars were under water. In years of lower water flow Piping Plovers are expected to nest along the river. Locations used will vary from year to year as sand bars are molded and reshaped by the current. The river channel from the first bend 8 km N of Outlook almost to Brightwater Creek (S of Saskatoon) will likely be used again and is therefore designated.

72 O and 72 J

46. Lake Diefenbaker

46a. Lake Diefenbaker: Thompson and McKenzie arms.

1991. (Harris and Lamont 1991) 223 Piping Plovers including 102 pairs (91 nests). Areas of concentration on the west and east shores of both arms, with Piping Plover use around most of the shoreline. Use pattern similar to previous years.

1990. (Harris and Lamont 1990) 33 Piping Plovers (7 nests) in a survey of the entire Thompson and McKenzie arms. The population was likely low due to increasing water levels throughout June leading to a deterioration of habitat. No young were raised due to high water.

1989. (Harris and Lamont 1989) 94 adult Piping Plovers and 27 chicks in a survey of the entire Thompson and McKenzie arms.

1988. (Harris 1988a) 97 adults and 34 chicks in a survey of the arms and a segment of the lake to just south of the Riverhurst ferry.

1986. (W.C. Harris unpubl.) 0 Piping Plover because the water level was too high at the time of the survey on June 28.

1984. (Harris et al. 1985) 223 adult Piping Plovers in a survey of the arms and segments of the lake to the Riverhurst ferry, 173 of these in the arms. The count was estimated to reach 379 in peak years.

Piping Plovers are considerably more concentrated on the arms than the body of Lake Diefenbaker. However, distribution is clustered and variable from year to year. Areas with nesting records are designated, although not all areas will be used every year. Use will depend on water level and possibly other factors.

46b. Lake Diefenbaker: Saskatchewan Landing to Thompson and McKenzie arms.

1991. (Barber, Robinson, Dobson, Hjertaas) 53 Piping Plovers, including 20 pairs (7 nests, 5 of these located in followup work), distributed along the eastern two-thirds of the lake. A small section of the lake was not surveyed due to poor weather and 1 or 2 pairs may have been missed.

1988. (Harris 1988b) 10 pairs of Piping Plovers (7 nests) at 10 sites along a stretch of the eastern shore centered around the Riverhurst ferry.

1986. (W.C. Harris unpubl.) 0 Piping Plover because water level was too high at the time of the survey on June 28.

1984. (Harris et al. 1985) 50 Piping Plovers along the sections surveyed from south of the Riverhurst Ferry to the arms (comprising only a small portion of the body of the lake).

The areas designated as critical habitat include the nesting and pair sites recorded from 1984 until 1991. There are 16 small polygons of critical habitat along the eastern two-thirds of the lake and 4 larger ones at the east end. The area west of Enfield Bay (map 72J) was systematically surveyed for the first time in 1991 and yielded only 4 nesting sites. On the body of Lake Diefenbaker nesting mainly occurs on points, with a few points having been used more than one year. Only the immediate area of these points are designated. Closer to the arms, Piping Plovers are more clustered and reuse the same areas for a number of years. Here the polygons designated are larger.

72 P/3 and 6, 72 I/14

47. Last Mountain Lake (excluding the southeast arm).

1991. (Barr) 9 Piping Plovers including 3 pairs. The water level is low and has been for a number of years; vegetation has encroached and shrunk beaches. All the Piping Plover sightings are between Rowan's Ravine and Arlington Beach, on the east side of the lake.

1984. (Harris et al. 1985) Peak count of 43 Piping Plovers. The sites consist mainly of points, all north of Rowan's Ravine.

1975. (Hatch et al. 1977) 4 pairs on the islands near Sarnia Beach.

There are a number of individual nesting records since 1932 (Smith 1988).

The lake is consistently used by Piping Plovers. The nesting and pair sites from 1984 and 1991, all points extending into the lake, have been designated as critical habitat. Other areas identified as suitable habitat that are similar points located in the northern two-thirds of the lake are also designated. Habitat other than points and islands have never been used on this basin.

72 P/10

48. Kutawagan Lake complex.

1991. (Harris) 8 Piping Plovers including 3 pairs (3 nests). Much of the area is dry but there are good beaches of mud with gravel bars in all basins. The southwestern basin mainly has beaches of 10-30 m with some beaches <10m.

1990. (Harris) 3 unpaired Piping Plovers on a May 16 survey of Kutawagan and 7 associated unnamed basins: 1 on a mud flat, 2 on gravel beaches. Locations: 524300 5720800, 521200 5713800, 518800 5717200.

There are 7 records from previous years. (W.C. Harris unpubl.)

1920. (Nat. Mus. of Natural Science, Ottawa collection) 1 specimen.

The entire NE basin and the middle basin east of the road (both with 1 pair in 1991) are designated because both are small and have wide beaches (>30 m). The most SW basin, with mainly 10-30 m wide beaches, supports 1 pair and 2 non-territorial birds. A polygon of critical habitat including these sightings is designated as it likely has the best habitat.

49. Lac du Chemin.

1991. (Harris) 5 Piping Plovers including 2 pair (2 nests).

There were 2 nests on the east side and 2 non-territorial birds on the west. The entire basin is designated as it is small and is widely used by Piping Plovers.

72 P/11

50. Colt Lake.

1991. (Harris) 4 Piping Plovers including 2 pair (2 nests, 4 eggs each).

1990. (Harris) 1 Piping Plover at 493300 5705400 on May 17.

The northern 2/3 of the basin has been designated as it includes all sightings and has a good beach described as mud/silt with gravel bars, 10-30 m wide.

72 P/11, 12 and 13

51. Little Manitou Lake.

1991. (Harris) 28 Piping Plovers including 12 pairs (12 nests). No nests on the west end.

1984. (Harris et al. 1985) Peak count of 7 Piping Plovers in a survey of the entire lake. 1 pair nesting at the west extremity and the others on the east. The best habitat is in the east and west extremities of the lake.

1978. (D. Hatch, from Renaud et al. 1979) At least 22 pairs and 8 nests.

1974, 1976 and 1978. (Renaud et al. 1979) Nesting noted.

The extreme east and west of the basin, the only suitable habitat for Piping Plovers, is designated. The designated area on the east end extends along the beach of the regional park as far as the 2 nest record locations (suitable habitat occurs along the entire park beach). It is unlikely that pairs on this beach would successfully raise a brood because of human disturbance.

72 P/15,16 and 73 A

53. Big Quill Lake.

1991. (Harris and Lamont 1991) 151 Piping Plovers, including 54 pairs (42 nests). Sites along the entire west and east sides of the lake, with fewest sites at the north tip and along the south side. Could not reach the shoreline so may have missed some feeding birds. Lake lowest in 7 years. Many unoccupied beaches.

1990. (Harris and Lamont 1990) 110 Piping Plovers around the entire lake. Population is likely underestimated as could not get close to the water's edge. Low water level. The most successful sites were situated on the NW end and the SW. Except for the south shore, part of the east shore and one point of the west shore, the nesting beaches are from 1-10 km from the water's edge and most are at least partially vegetated. The south shore habitat looks ideal but is not used for nesting. A July survey indicates this is a main staging area for Piping Plovers whose nests have failed.

1989. (Harris and Lamont 1989) 43 Piping Plovers including 2 pairs and 7 families. Less than 25% of the basin contains water.

1988. (Harris and Lamont 1989) 107 Piping Plovers.

1987. (Harris and Lamont 1989) 151 Piping Plovers.

1986. (Harris and Lamont 1989) 136 Piping Plovers.

1985. (Harris and Lamont 1989) 300 Piping Plovers (estimate of 337). Although previously the east shore was one of the best nesting areas, in 1985 75% of production was on the west shore.

1984. (Harris et al. 1985) 138 Piping Plovers (57 pairs), with a total estimate of 263, in a survey of 76% of the shoreline. Very low water levels (but higher than in the next 7 years). Shore width mostly .5-1 km. At the N end of the lake about 5 km of shore existed, so surveyed only the 100-200 m wide band along the water. Much of the shore further from the water was partially vegetated; Piping Plovers were located in this partially vegetated zone.

1978. (Renaud et al. 1979) 145 Piping Plovers (8 nests and 12 broods), estimate of 365. Surveyed most of the south and east shores. Density on the south shore: 1.3/km; density on the east shore: 4.6/km. Because the west and north shores appeared similar to the east shore from air photos, the density of these 2 areas was estimated at 4.6/km.

1947. (Todd 1947) Collected 24 young 6 km east of Dafoe on June 20. Piping Plover classified as "common".

1909. (Ferry 1910) Piping Plover common and "distributed along the south shore of [Big] Quill Lake in the proportion of about 1 pair of birds to the mile."

Big Quill Lake is entirely designated as critical habitat because there are breeding records from the edge to the center and all around the east, north and west shores, and to a lesser extent the south shore. Although nesting has occurred on the south shore, in 1990 mainly non-territorial birds were seen scattered all along, particularly in the July survey. These observations suggest the area is a good feeding ground.

72 P/16 and 62 M/13

54. Little Quill Lake.

1991. (Harris) 13 Piping Plovers including 5 pairs (5 nests). Habitat described as variable in substrate with beaches from <10 m to >30 m.

1989. (Hjertaas unpubl.) 4 nonterritorial Piping Plovers and 1 territorial on south shore. The territorial bird was on a point on section 31-33-14-W2.

1984. (Harris et al. 1985) 7 Piping Plovers, all nonterritorial.

Five areas of this very large lake have been designated. They include the 5 1991 breeding records. The 2 eastern locations also had breeding birds in 1984.

73 A/11

55. Basin Lake.

1991. (Kost) 4 Piping Plovers including 1 pair.

1988. (W.C. Harris pers. comm.) Piping Plovers present.

1986. (Weidl 1986) 0 Piping Plover.

One polygon has been designated on the east side which comprises the area of the 1991 sightings and the surrounding beach.

56. Elkona Lake.

1991. (Harris) 5 Piping Plovers including 3 pairs (3 nests).

1986. (Weidl 1986) 0 Piping Plover on July 14. Lake drawn down; good exposed sand and mudflats. Habitat rated fair.

The whole lake has been designated because the lake is small and the birds are scattered all around.

57. Middle Lake.

1991. (Kost) 4 Piping Plovers including 1 pair. The basin has a 10-30 m beach all around with broad expanses of gravel and sand on the east.

1986. (Weidl 1986) 12 Piping Plovers on July 11, in groups of 2 at 6 locations on the north, east and west. Habitat rated excellent.

1984. (Harris et al. 1985) 1 pair of Piping Plovers.

The eastern, northern and part of the west shoreline have been designated to include the best shoreline as described in 1991 and 1986.

73 A/5

58. Muskiki Lake.

1991. (Harris) 11 Piping Plovers, including 5 pairs (5 nests) in the north and central sections.

1990. (Harris) 1 bird on a gravel point near the highway and a seepage area.

The nesting area as well as the wider beach on the west and most areas of 10-30 m wide beaches have been designated. There were no observations in the southern arm of the lake so its beaches less than 10 m wide have been excluded.

73 A/5 and 73 B/8

59. Buffer Lake.

1991. (Wood) 3 Piping Plovers, including 2 pair (2 nests), all on 73B/8. The lake is a saline mudflat. Piping Plovers were only found where a thin gravel layer covered the mud. Limited and very localized habitat.

1972. (Renaud 1974) 3 pairs (1 nest). The behavior of at least 5 adults on a 1.4 mile stretch of shore indicated possibly 5 pairs.

The 5 small gravelly beaches along the north and west marked as good habitat are all designated because they appear to be the only nesting habitat. Two of these supported Piping Plovers in 1991 and the others are similar substrate.

73 A/6

60. Houghton Lake.

1991. (Harris) 7 Piping Plovers including 3 pairs (3 nests). The north end of the lake has 10-30 m beaches of silt with gravel bars. The south end is more marshy but has a few gravel bars.

1988. (W.C. Harris pers. comm.) Piping Plovers present.

1986. (Weidl 1986) 0 Piping Plover. Habitat rated fair (3 out of 5).

The northern third of the lake is designated because it includes all the Piping Plover sightings and is good habitat.

73 A/6, 7, 10 and 11

61. Lenore Lake.

1991. (Harris) 9 Piping Plovers, including 4 pairs (4 nests). The entire lake has beach. The southwest arm was not surveyed.

1990. (Harris) 1 Piping Plover at 502900 5820700 on the only part of the lake surveyed. There are gravel beaches in the northeast. The high water level is covering miles of suitable gravel and sand beaches.

1986. (Weidl 1986) 0 Piping Plover. Habitat rated poor.

The section of the basin designated stretches across the northern end of the lake and includes the sightings of pairs and a surrounding area. Although the entire lake has beaches, only 1 non-territorial bird was seen outside this area.

73 B/1

62. 103 667. Unnamed site NE of Clavet.

1991. (Kost) 1 pair of Piping Plovers with a nest.

1986. (M. Gollop unpubl.) 6 Piping Plovers (3 nests).

The entire basin is designated because it is small and has good habitat all around.

63. 155 642. Unnamed site NW of Blucher.

1991. (M. Gollop) 1 Piping Plover with a nest on the south shore of the NW arm. Good beaches in this area.

1972. (Renaud et al. 1979) 2 Piping Plovers.

As all the good beaches and the nest are located on the northwest side of the lake, this area has been designated.

73 B/11 and 14

64. Redberry Lake.

1991. (Harris and Lamont 1991) 21 Piping Plovers including 11 pairs or singles with nests (11 nests). Potential for more. Excellent habitat on east part of the lake, where most of the plover were found, west to Swystun Bay on the south shore.

1990. (Harris and Lamont 1990) 25 Piping Plovers. Reproductive success 0. Good to excellent conditions except for gulls. The plovers are using the eastern half of the lake.

1989. (Harris and Lamont 1989) 21 Piping Plovers including 8 pairs. Breeding along the eastern half of the lake.

1985. (Kerbes and Howard 1986) 41 Piping Plovers.

1984. (Harris et al. 1985) 40 Piping Plovers including 16 pairs.

The eastern half of the lake is designated as critical habitat because, over the years, Piping Plovers have been observed over most sections of the beach. In 1984 the 2 NW islands were found to be good habitat, but are likely not used because of the large concentration of gulls. They have been designated as well. The western shore has only had 1 sighting of non-territorial birds and has therefore not been designated.

73 B/6

65. Radisson Lake.

1991. (M. Gollop) 5 Piping Plovers (possibly 2 pairs). Gravel and sand around most of the lake except the south and west of the SW section. Four plovers found in the NW corner and 1 in the east bay, both areas with the widest beaches. Complete survey.

1990. (McAdam from Hjertaas 1991). 0 Piping Plover. Complete survey.

1986. (S. Shadick unpubl. from Smith 1987) 1 Piping Plover.

The northwest of the lake and the east bay have been designated because they are the locations of the birds and the best habitat.

73 C/1 and 2

**. Landis Lake. (Table 2. #192)

1991. (Weerstra) 0 Piping Plover. Sand/silt/mud flats around the entire lake, widest at the north and south ends. The south end is covered in salt deposits. Intermittent gravelly beaches, especially along the east and south sides, some with boulders.

1990. (McAdam from Hjertaas). 2 Piping Plovers, both males 100 m apart on the west shore (670700 5786800 and 670750 5787100). Complete survey. Possibly indicated 2 pairs.

1979. (G. Wapple unpubl. report to American Birds) 1 Piping Plover.

Although the habitat is rated good in 1991, the only locations of Piping Plovers are the 1990 records, therefore the area surrounding those records is designated.

73 C/3.

**. Grill Lake. (Table 2. #199)

1991. (Finley) 0 Piping Plover. Dry except for DU project. A return to wetter years would create habitat. Some sandy shoreline now vegetated.

1988. (P. Goossen unpubl.) 0 Piping Plover. Vegetated, 95% dry with water in D.U. project.

1984?. (M. Gollop unpubl. from Smith) 4 Piping Plovers; flightless young.

There is a confirmed breeding record but no locations for the sightings. The basin has potential if it gets water. It should be designated in part or in its entirety but the lack of locations prevents drawing a polygon on the map.

73 C/12

66. 694 390. Unnamed site NW of East Reflex Lake.

1991. (Lambert) 3 Piping Plovers including 1 pair. Marginal habitat along the west shore; good habitat at the south end but not very elevated.

1988. (P. Goossen unpubl.) Piping Plovers sighted. Gravel/sand substrate; rock spit on the south shore.

The area around the sightings is designated as it includes the 1991 sightings and is evaluated as good habitat. The polygon of critical habitat is extended a bit on the west to include a point with suitable habitat.

73 C/12 and 13

67. Manito Lake.

1991. (Lambert) 111 Piping Plovers including 51 pairs (6 nests). The Piping Plovers are using much of the best habitat but there is considerable unused habitat, especially along the north shore of the island. The birds are concentrated in the southeast bay, the western shore of the southern half of the lake and the north shore.

1986. (G. Wapple unpubl. report to American Birds) 44 Piping Plovers including 20+ territorial pairs on the south of the lake.

1984. (Harris et al. 1985) 27 Piping Plovers including 11 pairs; estimate of 40. Only 40% of the shoreline surveyed including much of the best habitat with only about half of the remaining shoreline seeming suitable. The island was not surveyed.

1982. (A.R. Smith unpubl. from Smith 1987) 3 Piping Plovers (1 nest) at Manitou Lake Regional Park.

1979. (G. Wapple unpubl. report to American Birds) Population estimate of 17 on the west and SW of the basin (1 nest). Estimate of 3 Piping Plovers on the south shore.

Six polygons of critical habitat are designated on Manitou Lake. They include all the known sightings and what has been evaluated as the best habitat.

73 C/12, 73 D/9

68. West Reflex Lake.

1991. (Lambert) 17 Piping Plovers including 8 pairs. The Saskatchewan portion had 5 birds (2 pairs) and the Alberta portion had 12 birds (5 pairs).

1988. (P. Goossen unpubl.) Piping Plovers sighted. Suitable habitat on the north and south shore.

1985. (Wershler et al. 1987) 2 Piping Plovers, probably breeding.

The south shore of the basin is designated because it is the area of the pair sightings. There are more birds on the Alberta side and the Critical Wildlife Habitat area should be extended there in accordance with their distribution. Because the habitat was evaluated as good on the NE of the basin, another area was designated around the location of the single bird.

73 C/15

69. Lambert Lake.

1991. (Lambert) 4 Piping Plovers (2 pairs) on a sand/mud flat with sparsely vegetated low sand dunes. The nesting habitat is poorly elevated and would disappear with a moderate increase in lake level. A wide mud flat of several hundred meters separates the nesting habitat from the water.

The whole west side of the lake is designated because it includes the nesting records and all the good nesting habitat.

73 C/6

70. Killsquaw Lakes.

1991. (Weerstra) 4 Piping Plovers including 1 pair. An estimated 80% of the lake was surveyed as the beaches were very wide; thus a few plovers may have been missed.

1986. (G. Wapple unpubl. report to American Birds) 1 Piping Plover. No location.

1984. (Harris et al. 1985) 1 Piping Plover, estimate of 2. 50% of suitable habitat surveyed.

1978. (Renaud et al. 1979) 4 Piping Plovers, 1 with 2 3-day old young on June 25.

As the beaches were very wide and adequate coverage was difficult, the area designated includes all sightings and surrounding good beaches within reasonable distance from water. There are 2 polygons of critical habitat.

73 C/7

71. Aroma Lake.

1991. (M. Gollop) 8 Piping Plovers, including 3 pairs. The best beach is at the south end at the narrows.

1978. (Renaud et al. 1979) 23 Piping Plovers and 6 2-week old young on June 25. No locations.

1979. (G. Wapple unpubl. report to American Birds) 4 Piping Plovers including 1 pair. No location.

The area of the narrows includes the recent sightings and the best beach so it is the only area designated at the present.

APPENDIX 2: Guidelines for the 1991 International Piping Plover Breeding Census.

PIPING PLOVER

GREAT LAKES/NORTHERN GREAT PLAINS
RECOVERY TEAM

GUIDELINES FOR THE 1991 INTERNATIONAL PIPING PLOVER BREEDING CENSUS

Outlined below are basic guidelines for the 1991 breeding census (winter guidelines will be sent out at a later date). Some states and provinces may have to deviate from the basic plan, however, details specific to each area will be ironed out individually. The census will be directed from Region 3 (Twin Cities, MN) and Susan Haig (803-656-0318) will direct the census until a permanent coordinator is appointed. She will maintain direct contact with Anne Hecht (Atlantic U.S. PPL Recovery Team Leader: 617-965-5100, ext. 316), Paul Goossen (Prairie Canada PPL Recovery Team Leader: 403-468-8921), and Bruce Johnson (Atlantic Canada PPL Recovery Team Leader: 506-536-3025). These team leaders will coordinate censuses in each of their areas via communication with state/provincial contact persons. Each contact person will then coordinate census efforts in their respective state or province. We ask that all census data be forwarded to the respective recovery team leaders by 15 August 1991. The recovery team leaders will summarize the information and send it on to S. Haig.

For the breeding census, we are asking that each state/province conduct one complete census of all adult Piping Plovers during the summer of 1991. The best case scenario would be that the census be undertaken during the same week across North America. In some cases, however, it may take all summer to conduct a comprehensive census. Therefore, wherever possible, we are asking that the census be undertaken during the first week of June 1991. If that is not possible, the next preferable time periods will be: 1. First two weeks of June; 2) First three weeks of June; 3) Last week of May and first three weeks of June.

Our goal is to count both unpaired adults and breeding pairs at each breeding site so that we will eventually get a total population estimate for each state and province. We are not asking for estimates of reproductive effort or success during the census. There are enough studies underway across North America that we will get representative, accurate productivity data without asking censusers for additional effort. In fact, we discourage censusers from looking for nests or chicks during the census. We hope to minimize censuser disturbance to breeding sites as much as possible.

To assure the safest, most productive census, please warn censusers of the dangers of counting Piping Plovers when it is very hot, very cold, or wet. Ideally, censusing is best conducted during early morning hours, although we realize that it may not be possible to confine censuses to early mornings. In any event, discourage censusers from remaining in any one territory for an extended period of time (i.e. more than 5 minutes). A final word of caution: alert censusers to the fact that Piping Plovers tend to flock when intruders enter a nesting area. This may result in overestimates of the population. Care should be taken to note where birds have flown in from to avoid double-counting.

Enclosed with these guidelines are breeding census data forms. State/provincial contact people should feel free to send copies of these forms to individual censusers. At the end of the summer, contact people should collect these forms, summarize census locations on a state highway map, and send all the information to the respective recovery team leader.

Susan Haig, Leader
South Carolina Coop. Wildlife Research Unit
Lehotsky Hall, Clemson University
Clemson, SC 29634

Lee Pfannmuller
Minnesota Dept. of Natural Resources
Box 7, 500 Lafayette Rd.
St. Paul, MN 55155

Ted Eubanks
1000 South Loop West, #115
Houston, TX 77054

Edward Pike
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Rogers City, MI 49779

William Harrison
U.S. Fish & Wildlife Service
Fort Snelling
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Mark Ryan
School of Forestry, Fisheries, & Wildlife
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Ross Lock
Nebraska Game & Parks Commission
Box 30370, 2200 N. 33rd St.
Lincoln, NE 68503

John Sidle
U.S. Fish & Wildlife Service
203 W. 2nd St.
Grand Island, NE 68801

PIPING PLOVER

GREAT LAKES/NORTHERN GREAT PLAINS RECOVERY TEAM

1991 INTERNATIONAL PIPING PLOVER BREEDING CENSUS

Individual Census Report

Please complete the following form for each location censused or surveyed, even if Piping Plovers are not found. Feel free to attach additional comments. These forms should be sent to your state or provincial Piping Plover coordinator by 15 August 1991. Contact Sue Haig (803-656-0318) for further information. Thanks for your help with the census!

1. Census Location (local name for site, river, county, state):
   ____

2. Total number of adult Piping Plovers seen: ______________________

3. Number of pairs of Piping Plovers seen: ______________________

4. Criterion for counting pairs: ______________________
   ____

5. Population estimate for this area (paired birds + unpaired adults): __________

6. Date of census: __________ Time Census Conducted: ______ to ______

7. Miles/km of habitat covered: __________ Number of people censusing: ______

8. Census conditions and methodology: Record weather, mode of transportation during census, was census completed for this area? What was missed? Circumstances that may have affected census results (e.g. abnormal water conditions, human disturbance, etc.)
   ____
   ____
   ____
   ____
   ____
   ____
   ____

Susan Haig, Leader
South Carolina Coop. Wildlife Research Unit
Lehotsky Hall, Clemson University
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Lincoln, NE 68503

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U.S. Fish & Wildlife Service
203 W. 2nd St.
Grand Island, NE 68801

Band combinations of any marked birds (record right leg; left leg; top to bottom).

____

____

____

10. Did any of the banded or unbanded birds appear to be injured? Please describe the injury:

____

____

____

____

11. Censusers names, phone numbers, and addresses: ____________________________

____

____

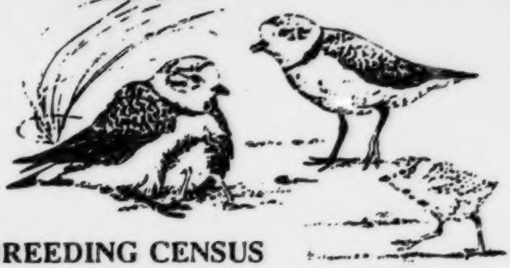
____

____

____

PIPING PLOVER

GREAT LAKES/NORTHERN GREAT PLAINS
RECOVERY TEAM



1991 INTERNATIONAL PIPING PLOVER BREEDING CENSUS

Report Form for Each SITE Censused or Surveyed

Please complete the following form for each site censused or surveyed, even if Piping Plovers are not found. Feel free to attach additional comments. These forms should be sent to your state or provincial Piping Plover coordinator by 15 August 1991. Contact Sue Haig (803-656-0318), your state coordinator, or your local recovery team leader if you have questions regarding the census.

1. Census Location: State/Province: ____________ County: ____________

   Name of Site: ____________

   Quad Map Name(s): ____________

   Township: ________ Range: ________ Section(s) ________ OR River Miles: ________

2. Date of census: ________ Time Census Conducted: ________ to ________

   Tide Stage: ________ General Weather: ____________

3. Number of pairs of Piping Plovers seen: ____________

4. Total number of Piping Plovers seen (paired and unpaired adults): ____________

5. Criterion for counting pairs: ____________

   ____

6. Miles/km of habitat covered (except for prairie wetlands): ________

   What percent of Piping Plover habitat was covered for this site? ____________

7. Number of people censusing: ________ Mode of transportation ____________

8. Were there any circumstances that may have affected census results?

   ____

   ____

   ____

   ____

   ____

Recycled Paper

9. Band combinations of any marked birds (record right leg: left leg; top to bottom).

10. Did any of the banded or unbanded birds appear to be injured? Please describe the injury:

11. Censusers names, phone numbers, and addresses:

12. Please list any other pertinent comments:

THANKS FOR YOUR HELP
WITH THE 1991 INTERNATIONAL PIPING PLOVER CENSUS!!

APPENDIX 4: Habitat Evaluation Form.

1991 INTERNATIONAL PIPING PLOVER BREEDING CENSUS
HABITAT EVALUATION FORM

1. Survey location: ____________________

2. Water level at time of survey: Dry Low Normal High

Comments: ____________________

____

3. At the time of the survey, is there suitable habitat for Piping Plover?

3.a. **NO.** The limiting factors are:

Emergent Vegetation Vegetated Shoreline Dry
Other ____________________

If water levels changed, would the waterbody provide suitable habitat?
Yes No
Explain ____________________

____

3.b. **YES.** Please mark beach areas on the map and describe:

Substrate: Gravelly Gravel/Sand Sand/Silt Mud/Saline

Beach width: <10 m 10 to 30 m >30 m

Comments on above, beach length, vegetation, boulders: ____________________

____

____

____

4. Is there potential for a larger Piping Plover population? Yes No

Explain. ____________________

5. Describe any threats to the security of this habitat to the Piping Plover. (e.g. cattle, ATV's, beach development, water level manipulation, etc.)

____

____

6. Describe any management actions that should be taken to protect or improve this area for Piping Plover.

____

____

APPENDIX 5: Survey Methodology handout.

1991 INTERNATIONAL PIPING PLOVER BREEDING CENSUS
SASKATCHEWAN

*SURVEY METHODOLOGY

Survey Dates

The survey period is from May 25 to June 21. The preferred time period is the first week of June 1991. When possible, surveys should be done in this week. The next preferable time periods are: 1) first 2 weeks of June; 2) first 3 weeks of June; and 3) last week of May and first 3 weeks of June.

We would like to see all surveys conducted between June 1 and June 14.

Survey Conditions

Avoid rainy days and/or extremely hot or cold conditions. Early morning and late afternoon are the best survey times; adults are more active, and mid-day heat is avoided.

To ensure disturbance is not excessive, please do not stay within any one Piping Plover territory for more than 5 minutes.

Survey Methods

Surveys will be conducted by walking or using all-terrain vehicles on beaches. Larger basins will need to be checked entirely for beaches, and all stretches of this habitat must be surveyed. For smaller waterbodies with suitable habitat, the entire basin should be examined.

The survey route will vary according to habitat situations. Try to walk or drive parallel to the water's edge remaining closer to the vegetation line than the water. You should be about 60-70% of the way from the water's edge towards the vegetation line at the back of the beach (Fig. 1). Do some weaving; periodically going close to the shore or vegetation line and scanning for plovers will contribute to good survey coverage. Plovers can be found feeding near the water's edge and near the vegetation line as well as nesting near the vegetation line, so all beach area must be covered. If the beach is greater than 100 m, two or more parallel passes will have to be made in order to cover the complete area.

For river surveys, observers should walk along beaches, including around islands and sandbars.

If two or more people are surveying, they should split up and do different portions of the same site. A larger beach section surveyed by two or more observers should be done simultaneously with each covering a separate area from the other.

In most cases, a pair of binoculars (7X+) will be sufficient for confirmed identification. A spotting scope could be useful in some circumstances for scanning or identification.

Piping Plovers tend to flock when intruders enter a nesting area. This may result in overestimates. Take care to note where birds have flown in from to avoid double-counting.

Data to be Collected

1. Forms

For each location surveyed, two forms (attached) need to be filled out: (a) Individual Census Report; and (b) Habitat Evaluation Form. Please fill both out whether or not Piping Plover are found.

(a) Report Form for Each Site Surveyed

Record census location information. The 1:50,000 topographical map name(s) and number code(s) should be recorded for "quad map name(s)". Township, range, and section(s) can be taken from the topo map. Please record section(s) for small unnamed waterbodies. The sections number from 1 to 36, starting in the lower right, numbering from right to left then left to right etc., and ending in the upper right.

Count both breeding pairs and unpaired adults at each site. On the report form, record both number of pairs, and total number of adults seen. If a pair is suspected, make an effort to find both adults, but only record pairs where both adults have been seen. Only actual observed individuals should be reported on the report form.

Criterion for a breeding pair is either:
* an adult pair exhibiting territorial behaviour; or
* two adults, with one incubating on a nest or flushed from a nest.
  (Record family groups or nests noticed, but do not search for young or nests.)

Examples of territorial behaviour would include:
* defense behaviour (chases, threat postures);
* predator distraction display;
* persistent alarm calls while attempting to lead surveyor away;
* courtship behaviour directed at a nearby female (nest-scraping, displays etc.)

A courting male by itself should not be considered evidence of a breeding pair, as the male may be unmated.

Estimate what percent of Piping Plover habitat was covered for the site. Kilometers of habitat need not be recorded.

(b) Habitat Evaluation Form

If at any one survey location there is a significant change in the type of beach, more than one Habitat Evaluation Form can be filled out. When this occurs, label beaches on the map as Type 1, Type 2 etc. and refer to these on the evaluation form.

2. Maps

For each waterbody surveyed, mark in pencil on a 1:50,000 topographic map:
* location of all sighted Piping Plover with these identified as singles, pairs or flocks;
* beach areas, outlining approximate length and width.

Where space permits, record the number of plovers on the maps. Otherwise, number the sites on the map and record the number of birds on a separate sheet.

Use the format:

* numbers to indicate birds;

* number followed by "P" to indicate pairs (e.g. 2P = 2 pairs);

* "BEACH" and an outlined area to indicate beaches. Indicate beach substrate from the categories:

Gravelly (G); Gravel/Sand (G/S); Sand/Silt (S/S); or Mud/Saline (M/S) Where space is lacking, the abbreviations in () can be used.

Report

Submit for each survey location:
* Report Form for Each Site Surveyed
* Habitat Evaluation Form
* Map with appropriate information

Complete the above in the field as soon as the waterbody has been surveyed.

Please submit by June 30, 1991 to the project coordinator:

Margaret Skeel
Piping Plover Census
Saskatchewan Natural History Society
Box 4348
Regina, SK S4P 3W6

*Survey Methodology and Fig. 1 adapted from J.P. Goosen, 1990.

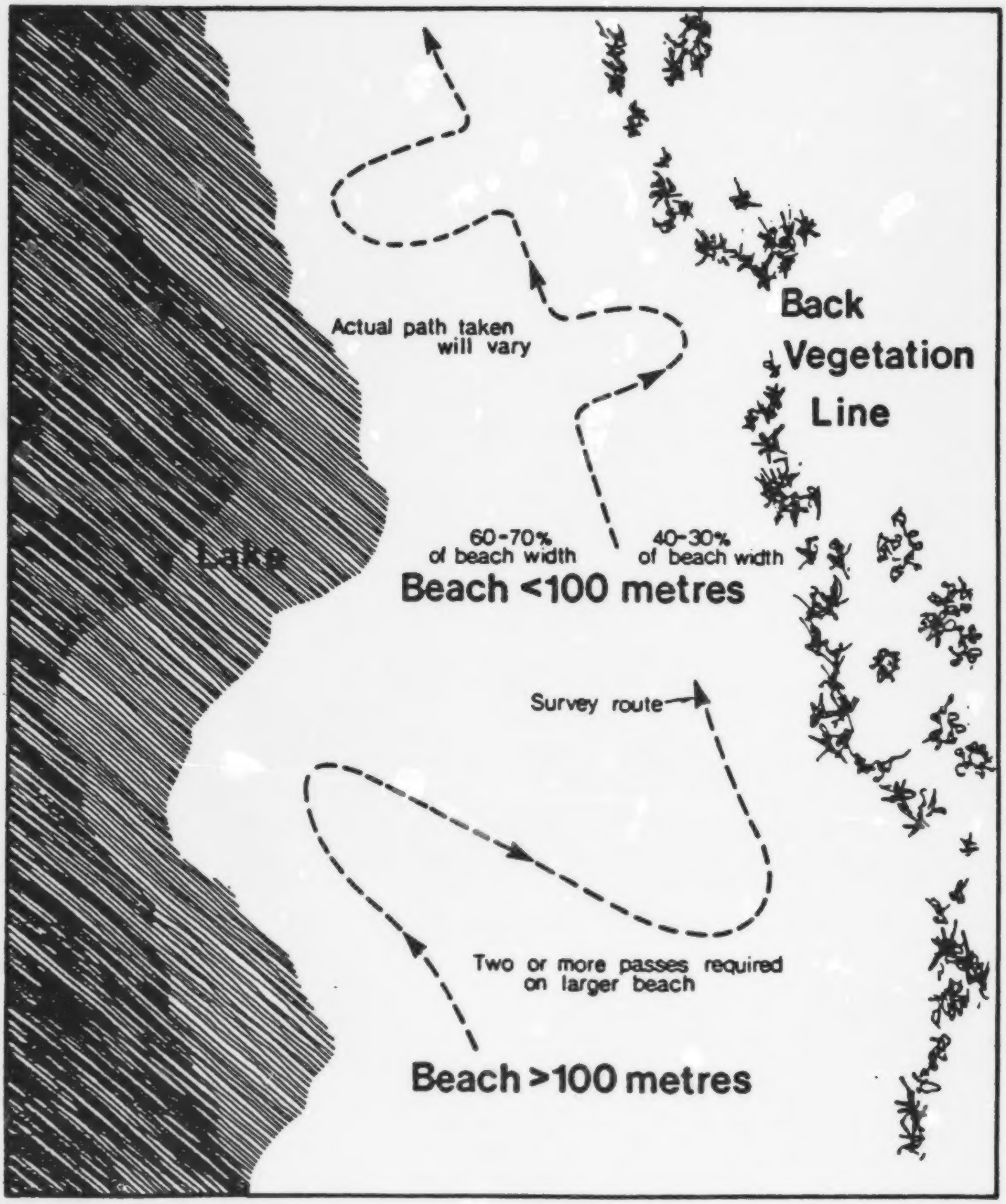
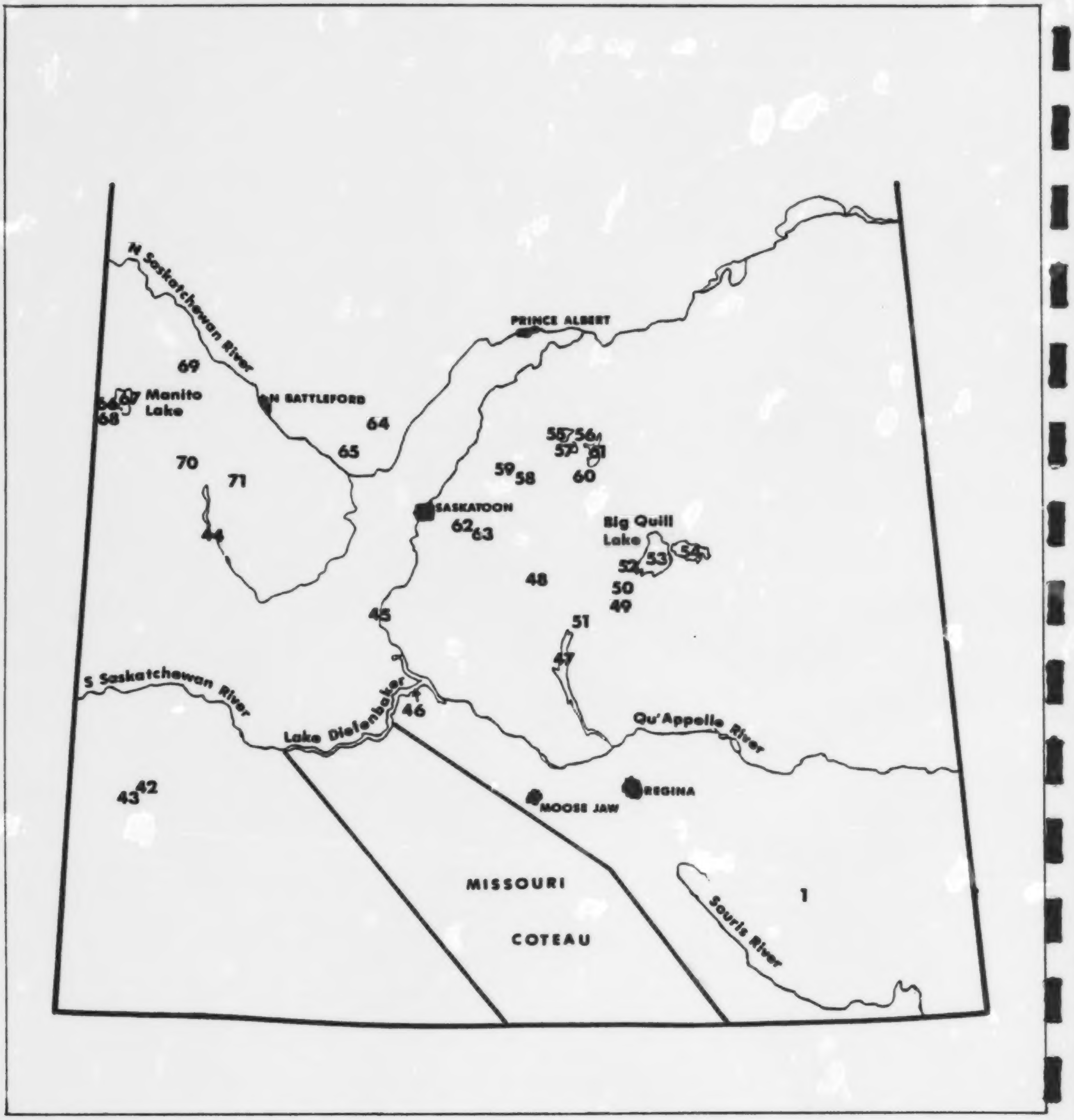

Actual path taken will vary
Back Vegetation Line
Lake
60-70% of beach width
40-30% of beach width
Beach <100 metres
Survey route
Two or more passes required on larger beach
Beach >100 metres

Figure 1. Piping Plover survey methods.


N Saskatchewan River
PRINCE ALBERT
69
66
67
Manito Lake
68
N BATTLEFORD
64
65
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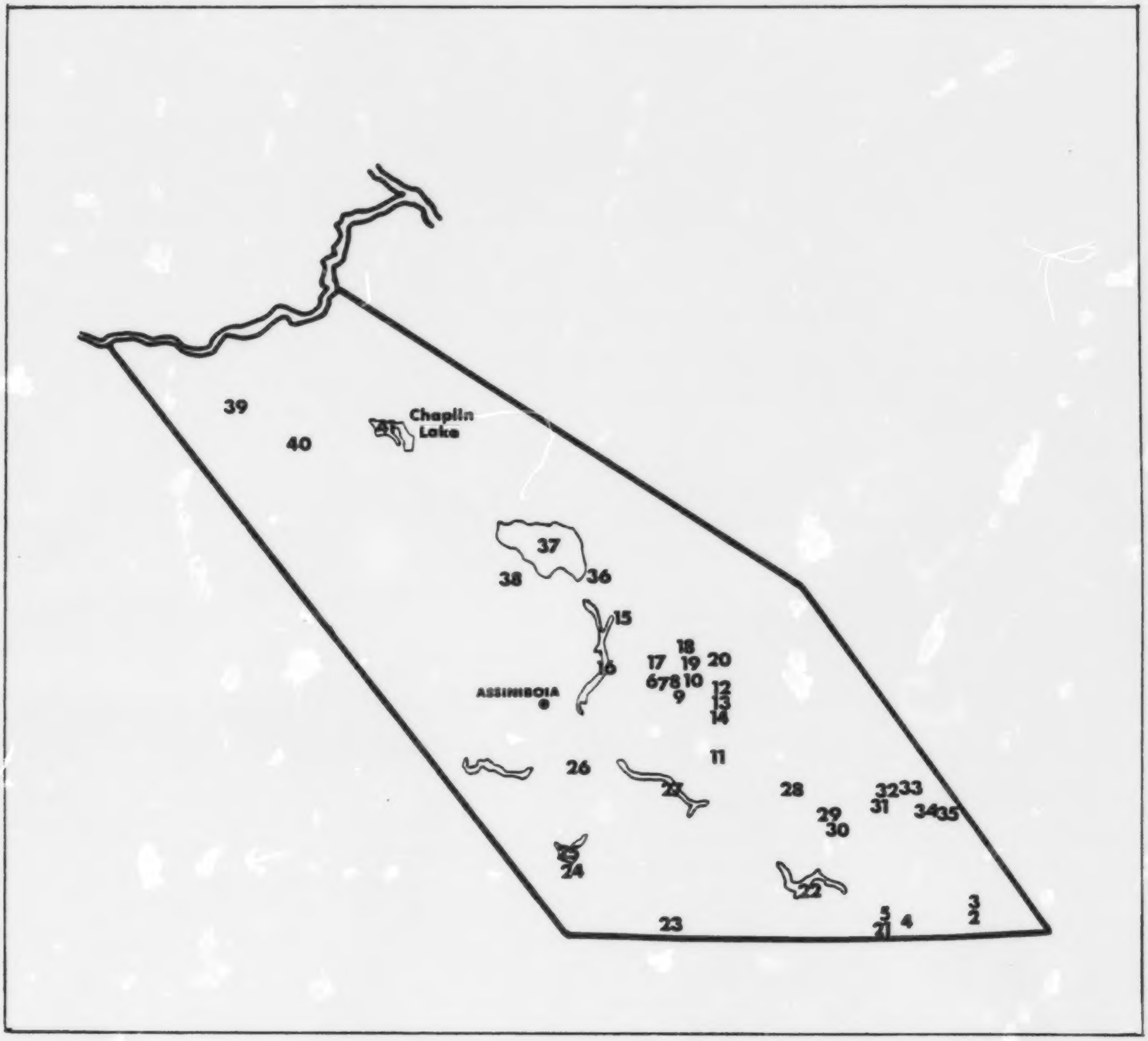
59
58
SASKATOON
62
63
Big Quill Lake
52
53
54
48
50
49
51
45
47
S Saskatchewan River
Lake Diefenbaker
46
Qu'Appelle River
43
42
MOOSE JAW
REGINA
MISSOURI
COTEAU
1
Souris River

Figure 1. Piping Plover locations, excluding the Missouri Coteau. Numbering follows Table 1.


39
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Chaplin Lake
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ASSINIBOIA
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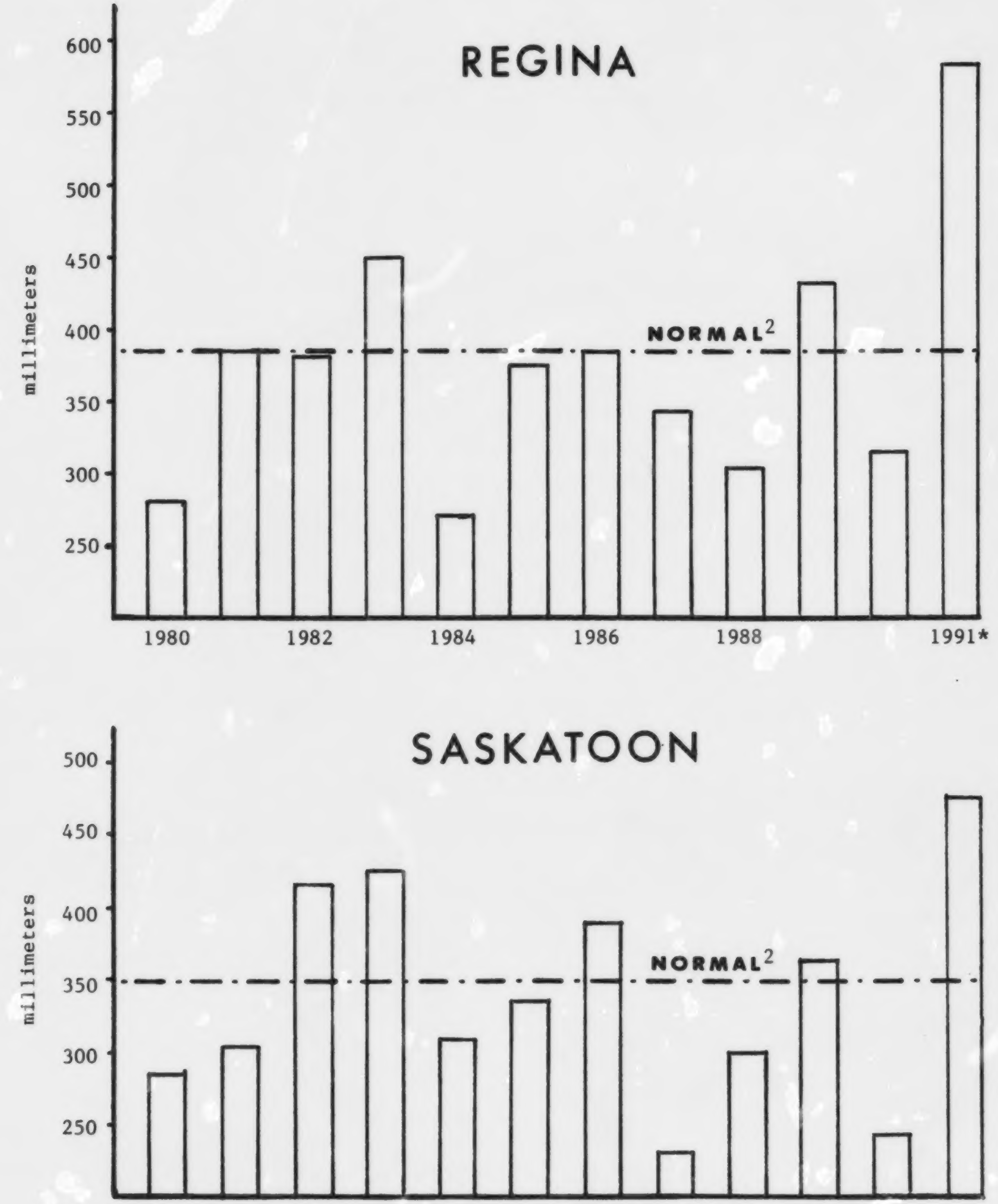
Figure 2. Piping Plover locations in the Missouri Coteau. Numbering follows Table 1.

Figure 3. Annual precipitation at Regina and Saskatoon[1]



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[1] Information from Atmospheric Environment Service, Environment Canada.

[2] Thirty-year normal from 1951-1980.

*At Regina, 329.0 mm fell in the months of April, May and June (normal is 149.7). At Saskatoon, 277.6 mm fell in April, May and June (normal is 120.1).

Table 1. Sites with Piping Plovers.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]	NUMBIRDS	NUMPAIRS
1	06/02/91	low	62E14	Rock L	1	0
2	06/05/91	normal	72H1	613 345	7	3
3	06/05/91	normal	72H1	615 375 Sandoff L	25	8
4	06/13/91	normal	72H1	East Coteau L	23	10
5	06/13/91	high	72H1,2	West Coteau L	7	3
6	06/10/91	low	72H11	635 075 Dryboro L	5	3
7	06/07/91	low	72H11	650 075	2	0
8	06/07/91	low	72H11	660 070 Burn L	4	2
9	06/07/91	low	72H11	705 056	15	7
10	06/10/91	low	72H11	741 095 Shoe L	4	2
11	06/05/91	low	72H11	825 855 Channel L	19	5
12	06/08/91	low	72H11	840 020	8	3
13	06/08/91	low	72H11	842 003	2	0
14	06/08/91	low	72H11	846 992	4	2
15	06/08/91	low	72H13	540 279	11	5
16	06/07/91	low	72H13,12	Lake of the Rivers	6	2
17	06/03/91	normal	72H13,14	633 135 Bliss L	3	1
18	06/06/91	low	72H14	735 197 Skyeta L	2	1
19	06/06/91	normal	72H14	750 145 Oro L	1	0
20	06/09/91	low	72H14	842 162	2	1
21	06/06/91	normal	72H2	355 290 Lonetree L	2	1
22	06/07/91	low	72H2	Big Muddy L	26	8
23	06/09/91	normal	72H3,4	Coronach Res	5	1
24	06/08/91	low	72H4	370 484 Grant L	1	0
25	06/13/91	normal	72H4,5	Fife L	29	9
26	06/12/91	low	72H5	Montague L	4	1
27	06/10/91	low	72H5,6	Willow Bunch L	31	16
28	06/06/91	low	72H7	060 725 Edna L	7	4
29	06/03/91	low	72H7	185 646 McGrath L	1	0
30	06/03/91	low	72H7	215 590 Salt L	1	0
31	06/05/91	low	72H7	310 695 Elsie L	15	6
32	06/06/91	low	72H7	335 712 McDonaugh L	11	4
33	06/06/91	low	72H7	360 717	1	0
34	06/05/91	normal	72H8	514 656	3	0
35	06/05/91	normal	72H8	517 656 Karl L	2	1
36	06/06/91	low	72I4	435 425 Frederick L	12	5
37	06/12/91	low	72I4,72J1	Old Wives L	42	17
38	06/07/91	low	72J1	170 394	1	0
39	06/06/91	low	72J6	310 956 Handsome L	1	0
40	06/11/91	normal	72J6,7	Reed L	1	0
41	06/11/91	high	72J7	Chaplin L	103	51
42	05/27/91	normal	72K6	Freefight L	5	2
43	05/27/91	normal	72K6	Ingebright L	2	1
44	06/08/91	low	72N15	Tramping L,south end	2	1
45	06/04/91	low	72O,73B	middle S Sask R	1	0
46	06/13/91	low	72O,J	Lk Diefenbaker	276	122
47	06/11/91	low	72P,72I	Last Mountain L	9	3
48	06/10/91	low	72P10	Kutawagan L complex	8	3
49	06/07/91	low	72P10	Lac du Chemin	5	2
50	06/09/91	normal	72P11	Colt L	4	2

Table 1. Sites with Piping Plovers con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME	NUMBIRDS	NUMPAIRS
51	06/10/91	normal	72P11,12,13	Little Manitou L	28	12
52	06/01/91	normal	72P15	247 380	1	0
53	06/14/91	low	72P15,16,73A1	Big Quill L	151	54
54	06/06/91	normal	72P16,62M13	Little Quill L	13	5
55	06/03/91	low	73A11	Basin L	4	1
56	06/04/91	low	73A11	Elkona L	5	3
57	06/10/91	low	73A11	Middle L	4	1
58	06/04/91	normal	73A5	Muskiki L	11	5
59	06/16/91	low	73A5,73B8	Buffer L	3	2
60	06/04/91	low	73A6	Houghton L	7	3
61	06/03/91	low	73A6,7,10,11	Lenore L	9	4
62	06/14/91	normal	73B1	103 667 NE of Clavet	2	1
63	06/14/91	normal	73B1	155 642 NWof Blucher	1	1
64	06/05/91	normal	73B11,14	Redberry L	21	11
65	06/04/91	normal	73B6	Radisson L	5	0
66	06/04/91	normal	73C12	694 390 NWof EReflex	3	1
67	06/07/91	normal	73C12,13	Manito L	111	51
68	06/04/91	low	73C12,73D9	West Reflex L, SK	5	2
69	06/08/91	low	73C15	Lambert L	4	2
70	06/04/91	low	73C6	Killsquaw Lks	4	1
71	06/11/91	normal	73C7	Aroma L	8	3

[1] Unnamed sites are identified by Universal Transverse Mercator (UTM) grid number.

Table 2. Sites with no Piping Plovers but with potential habitat.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME [1]	HABITAT91	POTENTIAL
1	06/05/91	normal	62E12	Nickle L*	Y	
2	06/03/91	low	62E14	Moose Mountain L	Y	
3	06/04/91	normal	62E4	735 355 Ratcliffe S	Y	
4	05/26/91	normal	62M1	Soda L	Y	
5	06/11/91	high	62M1,2	Crescent L	N	Y
6	06/11/91	normal	62M10	Good Spirit L*	Y	
7	06/01/91	low	62M11	Bitter L	Y	
8	06/12/91	high	62M11	Dog L	N	?
9	06/12/91	low	62M11	Echo L	N	Y
10	06/12/91	normal	62M11	Newburn L	Y	
11	06/12/91	low	62M11	Salt L	Y	
12	06/12/91	normal	62M11	Silver L	Y	
13	06/12/91	normal	62M11	Woody L	Y	
14	06/15/91	low	62M13,14	Fishing L	Y	
15	06/15/91	normal	62M14	Margo L	Y	
16	06/07/91	low	62M14	Stonewall L*	N	Y
17	06/09/91	normal	62M14	Usinneskaw L	Y	
18	06/09/91	normal	62M4	Lawleredis L,WofItun	N	Y
19	06/15/91	normal	62M7	Horseshoe L	Y	
20	06/08/91	low	62N12	Madge L	Y	
21	06/04/91	normal	63E2,3	Boundary Dam Res*	Y	
22	06/16/91	normal	63L15	Jan L main beach	Y	
23	06/21/91	low	6305	990 006 E ofPerigord	Y	
24	05/29/91	dry	72F1	Lonetree L	N	Y
25	05/30/91	high	72F15	Hungerford Lks	N	?
26	06/02/91	dry	72F4	Hay L	N	Y
27	06/02/91	high	72F4	Junction Res	N	?
28	05/30/91	High	72F5,6	Cypress L	N	Y
29	05/29/91	normal	72F9,16	Notukeu L	Y	
30	05/29/91	normal	72G12	Driscol L	Y	
31	06/16/91	normal	72G13,72J4	Lac Pelletier	N	Y
32	05/29/91	high	72G5	Huff L	N	Y
33	06/29/91	High	72G5	Newton L	N	Y
34	06/02/91	low	72G6	Soda L	Y	
35	06/01/91	low	72G6	White L	N	Y
36	06/10/91	low	72G8	Twelve Mile Lake*	Y	
37	06/07/91	low	72G9	150 065	N	Y
38	06/07/91	low	72G9	995 088	N	Y
39	06/08/91	normal	72H1	414 530	Y	
40	06/08/91	?	72H1	421 542	?	?
41	06/05/91	high	72H1	455 310 LittleCoteau	Y	
42	06/08/91	low	72H1	493 480	Y	
43	06/05/91	normal	72H1	500 280 Alkali L	Y	
44	06/07/91	normal	72H1	515 475	Y	
45	06/06/91	normal	72H1	535 455	Y	
46	06/08/91	normal	72H1	538 494 Alma L	Y	
47	06/06/91	normal	72H1	550 450	Y	
48	06/08/91	normal	72H1	550 495 Wellington L	Y	
49	06/05/91	normal	72H1	613 353	Y	
50	06/05/91	normal	72H1	630 604 Mather L	Y	

Table 2. Sites with no Piping Plovers but with potential habitat con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]	HABITAT91	POTENTIAL
51	06/05/91	normal	72H1	675 432 Beaubier	Y	
52	06/07/91	low	72H11	646 076	Y	
53	06/07/91	unknow	72H11	653 054	N	?
54	06/07/91	low	72H11	656 056	N	?
55	06/07/91	low	72H11	662 075	Y	
56	06/07/91	low	72H11	684 062	Y	
57	06/07/91	low	72H11	691 060	Y	
58	06/06/91	low	72H11	698 105	Y	
59	06/07/91	low	72H11	700 080	Y	
60	06/02/91	low	72H11	708 097	N	?
61	06/05/91	low	72H11	710 025	N	?
62	06/07/91	low	72H11	714 054	Y	
63	06/02/91	low	72H11	717 067	Y	
64	06/10/91	normal	72H11	738 085	N	Y
65	06/10/91	normal	72H11	739 075	Y	
66	06/08/91	normal	72H11	832 010	Y	
67	06/08/91	low	72H11	841 995	Y	
68	06/08/91	low	72H11	842 027	Y	
69	06/02/91	low	72H12	578 063	Y	
70	06/08/91	low	72H13	560 273	Y	
71	06/08/91	low	72H13	565 273	Y	
72	06/06/91	low	72H13	571 267	Y	
73	06/03/91	low	72H13	630 150 N of Bliss L	N	Y
74	06/04/91	normal	72H13	640 309	Y	
75	06/04/91	normal	72H14	650 295	Y	
76	06/09/91	low	72H14	673 266	Y	
77	06/06/91	low	72H14	733 205	Y	
78	06/10/91	low	72H14	735 128	Y	
79	06/06/91	low	72H14	737 191	Y	
80	06/06/91	low	72H14	740 181	Y	
81	06/06/91	low	72H14	740 187	Y	
82	06/06/91	low	72H14	752 204	Y	
83	06/07/91	low	72H14	770 230	Y	
84	06/10/91	dry	72H14	775 125	N	Y
85	06/10/91	low	72H14	776 116	Y	
86	06/07/91	dry	72H14	800 220 Scottie L*	N	?
87	06/09/91	low	72H14	863 200	N	Y
88	06/06/91	high	72H2	300 342 Coteau Pots	Y	
89	06/06/91	high	72H2	300 345 Coteau Pots	Y	
90	06/06/91	high	72H2	337 540 Radio Towers	Y	
91	06/06/91	high	72H2	340 538 Radio Towers	N	Y
92	06/07/91	low	72H3	685 318 Crookstow R	Y	
93	06/07/91	low	72H3	948 545 Bulkin L	Y	
94	06/08/91	low	72H4	395 500 North Pond	Y	
95	06/04/91	high	72H5	603 680 Bonneau L	N	Y
96	06/04/91	low	72H5	633 625 Rivard L	N	Y
97	06/06/91	low	72H6	970 670 Coal Mine L	N	?
98	06/06/91	low	72H7	020 739	Y	
99	06/08/91	low	72H7	050 625	N	Y
100	06/06/91	normal	72H7	108 714 Bead L	Y	

Table 2. Sites with no Piping Plovers but with potential habitat con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]	HABITAT91	POTENTIAL
101	06/06/91	low	72H7	114 781 Green L*	N	Y
102	06/03/91	normal	72H7	193 638 McGrath L S	Y	
103	06/08/91	Low	72H7	276 667 Stiles L	Y	
104	06/05/91	low	72H7	304 706	Y	
105	06/05/91	low	72H7	315 684 Marjorie L*	Y	
106	06/05/91	normal	72H8	512 718	Y	
107	06/05/91	low	72H8	514 581	N	?
108	06/05/91	low	72H8	543 575	N	Y
109	06/01/91	normal	72I13	Lovering L East	Y	
110	06/09/91	low	72I4	375 604	Y	
111	06/09/91	normal	72I4	382 645	Y	
112	06/09/91	normal	72I4	480 560	Y	
113	06/09/91	high	72I4	488 445	Y	
114	06/05/91	high	72I4	490 432 Dunkirk L	Y	
115	06/12/91	normal	72I4	500 450	Y	
116	06/12/91	normal	72I4	503 440	Y	
117	06/05/91	low	72I4	534 490	Y	
118	06/05/91	normal	72I4	556 388 Howe Pond	Y	
119	06/05/91	low	72I4	560 404	N	Y
120	06/05/91	low	72I4	567 435	Y	
121	06/05/91	low	72I4	579 428	Y	
122	06/06/91	low	72J1	135 405	Y	
123	06/06/91	dry	72J1	148 612	N	Y
124	06/06/91	low	72J1	155 623	Y	
125	06/08/91	low	72J1	180 625	Y	
126	06/08/91	low	72J1	195 630	Y	
127	06/06/91	low	72J1	220 587	N	?
128	06/06/91	low	72J1	246 585	N	?
129	06/06/91	low	72J11	288 035 Salt L	Y	
130	06/13/91	normal	72J11	493 073	Y	
131	06/13/91	?	72J11	563 035 Twin Lake	N	
132	06/06/91	dry	72J11	Prairie View L	N	
133	06/05/91	high	72K,N	upstream S Sask R*	N	Y
134	06/01/91	high	72K1	Gander L	N	?
135	05/31/91	normal	72K1,8	Antelope L*	Y	
136	05/31/91	dry	72K2	Lake of the Narrows	N	?
137	05/31/91	normal	72K2,72F15	Sidewood Sloughs*	Y	
138	06/07/91	normal	72K3	110 467 Sof Tenaille	Y	
139	06/27/91	dry	72K3,6	Bigstick L*	N	Y
140	06/07/91	dry	72K4	878 647 Wof GPrairie	N	?
141	06/07/91	low	72K4	Bitter L	N	?
142	06/07/91	normal	72K5	MacLaren L	Y	
143	06/02/91	drylow	72K7	693 768 S Hazlet L	N	?
144	05/27/91	normal	72K7,8,9	Snakehole L	Y	
145	06/01/91	dry	72K8	705 925	N	Y
146	06/10/91	dry	72N13	Plover L	N	Y
147	06/07/91	dry	72N14	Ethmuir L	N	?
148	06/07/91	dry	72N14	Street L	N	?
149	06/07/91	low	72N14	Zella L*	Y	
150	06/07/91	dry	72N15	Opuntia L*	N	?

Table 2. Sites with no Piping Plovers but with potential habitat con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]	HABITAT91	POTENTIAL
151	06/10/91	low	72N5	Alsask L*	Y	
152	06/08/91	low	72O13	025 454 NofValleyCtr	N	Y
153	06/14/91	high	72O16	255 402 S of Allan	N	?
154	06/14/91	high	72O16	Bradwell Res*	N	Y
155	06/14/91	high	72O16	Strehlow Pond	N	?
156	06/19/91	low	72O6	Stockwell L	N	Y
157	06/14/91	high	72P12	Bultel L	Y	
158	06/15/91	normal	72P12	Devil's L	Y	
159	06/14/91	high	72P12	Horseshoe L	N	Y
160	06/17/91	high	72P13	Buffalo L	N	Y
161	06/07/91	normal	72P14	832 482 W of Lanigan	Y	
162	06/09/91	normal	72P15	Jansen L*	N	Y
163	06/09/91	low	72P16	Mud L(Middle Quill)*	Y	
164	06/20/91	low	72P6	805 040 NEof Simpson	N	?
165	06/16/91	normal	73A11	Marie L	N	Y
166	06/16/91	normal	73A12	Oliver L	N	Y
167	06/10/91	low	73A14	700 560 Jumping L	Y	
168	06/10/91	normal	73A14,15	665 540 Jumping L	Y	
169	06/03/91	low	73A4	485 681 MeachamSouth	N	Y
170	06/03/91	low	73A4	603 647 SEof Meacham	Y	
171	06/07/91	normal	73A6	Waldsea L	Y	
172	06/16/91	normal	73A6,5	665 130	Y	
173	06/05/91	low	73A8	Charron L	Y	
174	06/14/91	normal	73B,A,H	downstream S Sask R*	Y	
175	06/21/91	normal	73B,C,G,H	N Sask R, NBattl-PA*	Y	
176	06/14/91	normal	73B1	097 670 NE of Clavet	Y	
177	06/14/91	normal	73B1	124 657*	Y	
178	06/13/91	low	73B1	Burke L	Y	
179	06/02/91	normal	73B1	Patience L	Y	
180	06/02/91	low	73B1	Porter L	Y	
181	06/13/91	normal	73B10,15	Nesdoly L	N	Y
182	06/10/91	low	73B12	130 410 W of Richard	N	?
183	06/10/91	normal	73B13	Narrow L	N	?
184	06/11/91	normal	73B15	Blaine L North	N	Y
185	06/10/91	low	73B4	190 810 NWof vanScoy	Y	
186	06/04/91	low	73B5	Lizard L	N	Y
187	06/15/91	high	73B9	Marion L	Y	
188	06/15/91	?	73B9	Rempel L	Y	
189	06/09/91	low	73C1	722 817 SE of Landis	Y	
190	06/09/91	low	73C1	764 805 WofWhiteshor	Y	
191	06/05/91	low	73C1	Castlewood L	Y	
192	06/06/91	normal	73C1	Lydden L	Y	
193	06/06/91	low	73C1	Oban L	Y	
194	06/09/91	low	73C1,2	Landis L*	Y	
195	06/18/91	low	73C11	254 367 W of Schmidt	N	?
196	06/15/91	normal	73C11	Seagram L South	Y	
197	06/15/91	normal	73C11	Seagram L West	Y	
198	06/04/91	normal	73C12	East Reflex L	Y	
199	06/09/91	low	73C2	600 784 N of Handel	Y	
200	06/08/91	normal	73C2	Sunny L	Y	

Table 2. Sites with no Piping Plovers but with potential habitat con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME [1]	HABITAT91	POTENTIAL
201	06/18/91	low	73C3	Grill L*	N	Y
202	06/19/91	low	73C5	Chisholm L	Y	
203	06/19/91	low	73C5	Winterhaldt L	Y	
204	06/19/91	dry	73C5	Zoller L	N	Y
205	06/05/91	dry	73C6	Ear L*	N	Y
206	06/04/91	low	73C6	Jay L*	Y	
207	06/05/91	dry	73C6	Muddy L*	N	?
208	06/04/91	normal	73C6	Northwest Reed L	Y	
209	06/11/91	low	73C8	Keppel L	Y	
210	06/08/91	normal	73F13	Peck L	Y	
211	06/13/91	low	73F2	Russell L	Y	
212	06/10/91	high	73F5	Hillmond L	Y	
213	06/13/91	low	73F7	Stony L	Y	
214	06/21/91	low	73F8	Birch L	Y	
215	06/10/91	normal	73G11	Pekakumew L*	Y	
216	06/17/91	low	73G8	1 km SE of Buck L	Y	
217	06/17/91	high	73G8	Big Sucker L	N	Y
218	06/08/91	normal	73J4	Green L	Y	
219	06/21/91	low	73K5,6	Lac des Iles	Y	
220	06/11/91	normal	73N15	Peter Pond L	Y	
221	06/08/91	low	73O13	026 475 NofValleyCtr	Y	
222	06/11/91	normal	73O5	Lac Ile a la Crosse	Y	
223	06/22/91	high	74L16,N1-4,O4	Lake Athabasca*	Y	

[1] Unnamed sites are identified by Universal Transverse Mercator (UTM) grid number.

* Denotes basins with previous record(s) of Piping Plovers (Skeel 1990).

Table 3. Sites with no Piping Plovers and no potential habitat.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]
1	06/03/91	low	62E14	Gooseberry L
2	06/20/91	high	62L15	Melville Res
3	06/18/91	low	62L15	Surprise L
4	06/16/91	high	62M1	Anderson L
5	06/10/91	low	62M1	Leech L
6	06/06/91	?	62M1,2	York L
7	06/11/91	normal	62M10	Patterson L
8	06/12/91	high	62M11	214 344 NE of Dog L
9	06/12/91	high	62M11	225 344 NE of Dog L
10	06/12/91	dry	62M11	243 285 W of Newburn
11	06/01/91	low	62M11	Ebel L
12	06/01/91	low	62M11	Ellinor L
13	06/01/91	normal	62M11	Sheho L
14	06/15/91	normal	62M13	Little Fishing L
15	06/09/91	normal	62M14	165 360 EofWhitesand
16	06/08/91	normal	62M14	Hazel L
17	06/08/91	dry	62M14	Hedley L
18	06/09/91	normal	62M14	Sakwasew L (Mink L)
19	06/07/91	normal	62M14	Saline L
20	06/09/91	normal	62M14	Whitesand L
21	06/24/91	normal	62M7	Wilson L
22	06/21/91	normal	62M8	McQuat L
23	06/09/91	normal	62N12	Batka L
24	06/09/91	high	62N12	Jackfish L
25	06/04/91	low	63D4	Salkeld L
26	06/04/91	low	63D5	Nut L
27	05/29/91	low	72F1	Island L
28	06/16/91	normal	72G12,13	Gouverneur Res
29	06/16/91	high	72G13	960 355 nr LacPellet
30	05/29/91	normal	72G13	Lizard L
31	06/01/91	dry	72G6	353 670 Reed L
32	05/21/91	normal	72G6	515 652 SummercoveRe
33	06/07/91	normal	72G9	028 055
34	06/08/91	normal	72H1	416 537
35	06/08/91	low	72H1	418 518
36	06/08/91	dry	72H1	422 514
37	06/08/91	low	72H1	429 510
38	06/08/91	normal	72H1	494 547
39	06/06/91	normal	72H1	590 320 Overland L
40	06/07/91	low	72H11	682 070
41	06/07/91	dry	72H11	693 066
42	06/02/91	normal	72H11	725 075
43	06/02/91	normal	72H11	736 049
44	06/08/91	lowdry	72H11	840 970
45	06/08/91	low	72H11	842 040
46	06/04/91	normal	72H12	368 962 Willows Res
47	06/02/91	normal	72H12	508 024
48	06/08/91	low	72H12	558 056
49	06/02/91	low	72H12	622 076
50	06/10/91	dry	72H12	637 071

Table 3. Sites with no Piping Plovers and no potential habitat con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]
51	06/08/91	dry	72H13	575 276
52	06/04/91	normal	72H13	Lk of the Rivers arm
53	06/04/91	normal	72H14	660 300 Agnellice L
54	06/10/91	dry	72H14	733 133
55	06/06/91	normal	72H14	733 158 Maud Lks
56	06/08/91	dry	72H14	785 244 Matts L
57	06/10/91	low	72H14	786 115
58	06/10/91	low	72H14	803 120
59	06/10/91	normal	72H14	818 123
60	06/09/91	low	72H14	831 160
61	06/09/91	dry	72H14	866 223
62	06/12/91	dry	72H16	Ibsen L
63	06/06/91	high	72H2	296 345 Coteau Pots
64	06/06/91	high	72H2	300 350 Coteau Pots
65	06/06/91	high	72H2	302 343
66	06/06/91	normal	72H3	950 555 Bullkin L
67	06/08/91	dry	72H4	390 488 Phillis L
68	06/08/91	dry	72H4	400 535
69	06/09/91	normal	72H5	308 575 oxbow ofFife
70	06/09/91	low	72H5	500 747
71	06/07/91	low	72H6	878 810
72	06/06/91	low	72H6	913 785
73	06/06/91	low	72H6,11	855 823
74	06/06/91	normal	72H7	033 747 Gray Spring
75	06/06/91	low	72H7	035 695
76	06/06/91	low	72H7	039 709
77	06/06/91	low	72H7	049 764
78	06/06/91	low	72H7	057 756
79	06/06/91	normal	72H7	095 724 McKinnon L
80	06/06/91	normal	72H7	113 712
81	06/05/91	normal	72H7	302 701
82	06/06/91	low	72H7	350 729
83	06/06/91	low	72H7	355 725 Mackenzie L
84	06/05/91	low	72H8	480 596 Cecilia L
85	06/05/91	normal	72H8	503 713
86	06/05/91	normal	72H8	522 651 Bowden L
87	06/05/91	low	72H8	535 588
88	06/05/91	low	72H8	547 587
89	06/05/91	low	72H8	555 575
90	06/05/91	normal	72H8	575 590 Skinner L
91	06/12/91	dry	72H9,16	Buttermilk Lks
92	06/01/91	low	72I13	Alexandra L
93	06/01/91	normal	72I13	Lovering L West
94	06/09/91	dry	72I4	378 655
95	06/09/91	dry	72I4	385 653
96	06/09/91	dry	72I4	395 643
97	06/12/91	dry	72I4	433 585
98	06/05/91	low	72I4	533 400
99	06/05/91	high	72I4	544 390
100	06/05/91	high	72I4	564 409

Table 3. Sites with no Piping Plovers and no potential habitat con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]
101	06/06/91	dry	72J1	146 610
102	06/08/91	normal	72J1	177 625
103	06/08/91	dry	72J1	194 635
104	06/13/91	normal	72J10,11	Cutbank L
105	06/06/91	normal	72J11	298 023 SE of Salt L
106	06/06/91	dry	72J11	373 035 N of Herbert
107	06/13/91	?	72J11	540 054 Dewey L
108	06/13/91	normal	72J11	560 022 E Alkali L
109	06/01/91	dry	72J13	150 310 (Stud L)
110	06/01/91	low	72J13	965 370 SEofClearwat
111	06/01/91	low	72J13	971 366 SEofClearwat
112	06/01/91	dry	72J13	975 357 SEofClearwat
113	06/01/91	dry	72J13	985 345 SEofClearwat
114	06/01/91	normal	72J13	Clearwater L
115	06/01/91	low	72K1	Goose L
116	06/01/91	normal	72K1	Gosling L
117	06/01/91	low	72K10	980 645 N Hazlet L
118	05/31/91	normal	72K3	Andrews L
119	05/31/91	low	72K3	Crane L
120	06/07/91	dry	72K3	Tenaille L
121	06/07/91	dry	72K4	062 647 Eof GPrairie
122	05/27/91	normal	72K6	Mason L
123	06/01/91	dry	72K7	653 947 MiddleHazlet
124	06/01/91	low	72K7	680 890 Main HazletL
125	06/01/91	low	72K8	973 875
126	06/07/91	dry	72N14	Beaufield L
127	06/10/91	dry	72N14	Pedersen L
128	06/11/91	dry	72N6	Cutbank L
129	06/15/91	low	72O10	730 150 NEof Outlook
130	06/14/91	high	72O10	Brightwater Res.
131	06/08/91	low	72O13	965 615 S of Biggar
132	06/05/91	normal	72O3	Luck L
133	06/01/91	dry	72O5	Glamis L
134	06/10/91	low	72O6	360 921 Anerley L"A"
135	06/10/91	normal	72O6	380 935 Anerley L"B"
136	06/12/91	low	72O6	420 398 Anerley L"C"
137	06/12/91	normal	72O6	445 945 Anerley L"D"
138	06/10/91	low	72O6	Coteau L
139	06/10/91	low	72O6	Milden L
140	06/15/91	low	72O9	046 066 Wof Kenaston
141	06/15/91	high	72O9	083 066 Wof Kenaston
142	06/15/91	low	72O9	405 077 Wof Kenaston
143	06/04/91	normal	72O9,16	Blackstrap Res
144	06/13/91	dry	72P11	752 265 E of Watrous
145	06/13/91	low	72P11	Bank L
146	06/14/91	normal	72P12	373 127 SW of Young
147	06/15/91	low	72P12	419 060 EofFarrerdal
148	06/14/91	high	72P13	328 364 W of Buffalo
149	06/14/91	high	72P13	525 336 SE of StrapL
150	06/14/91	high	72P13	Strap L

Table 3. Sites with no Piping Plovers and no potential habitat con't.

Record#	DATESURVEY	WATERLEVEL	MAPSHEET	SITENAME[1]
151	06/07/91	normal	72P14	905 451 W of Lanigan
152	06/07/91	high	72P14	980 404 S of Lanigan
153	06/07/91	low	72P2	034 705 NE of Duval
154	06/10/91	normal	72P6	946 944 SWofHatfield
155	06/20/91	low	72P6	Bulrush L
156	06/10/91	high	73A13	Pelican L
157	06/07/91	normal	73A3	Humboldt L
158	06/03/91	low	73A4	470 708 Meacham West
159	06/03/91	low	73A4	492 704 Meacham East
160	06/05/91	dry	73A7,2	300 905 N of Watson
161	06/05/91	low	73A7,8	Lac Vert
162	06/05/91	low	73A8	Edouard L
163	06/05/91	low	73A8	Hubbell L
164	06/05/91	low	73A8	Lemoine L
165	06/05/91	low	73A9,10	Lac Vert Nord
166	06/14/91	normal	73B1	Cheviot L
167	06/14/91	low	73B1	Crawford L
168	06/13/91	low	73B10	710 360 S of Makarof
169	06/13/91	normal	73B10	Boulanoff L
170	06/13/91	normal	73B10	Carmen L
171	06/13/91	normal	73B10	Horner L
172	06/13/91	normal	73B10	Makaroff L
173	06/10/91	dry	73B12	173 387 S of Richard
174	06/13/91	low	73B14	Meadow L
175	06/11/91	high	73B15	Gillies L
176	06/02/91	low	73B4	Van Scoy L
177	06/01/91	dry	73B8	165 935 SEofAberdeen
178	06/18/91	normal	73C10	Thackeray L
179	06/15/91	normal	73C11	McLean L
180	06/15/91	low	73C11	Raspberry L
181	06/15/91	normal	73C11	Schmidt L
182	06/15/91	normal	73C11	Scrub L
183	06/15/91	low	73C11	Yellowsnake L
184	06/19/91	low	73C5	Leier L
185	06/10/91	normal	73C7	Coldspring L
186	06/04/91	dry	73C8	Kimoff L
187	06/18/91	normal	73F13	Bronson L
188	06/10/91	high	73F5	Greenstreet L
189	06/17/91	low	73G10	Stump L
190	06/17/91	high	73G7,8	Fish L
191	06/17/91	high	73G8	1 km N Big Sucker L
192	06/17/91	high	73G8	Bear L

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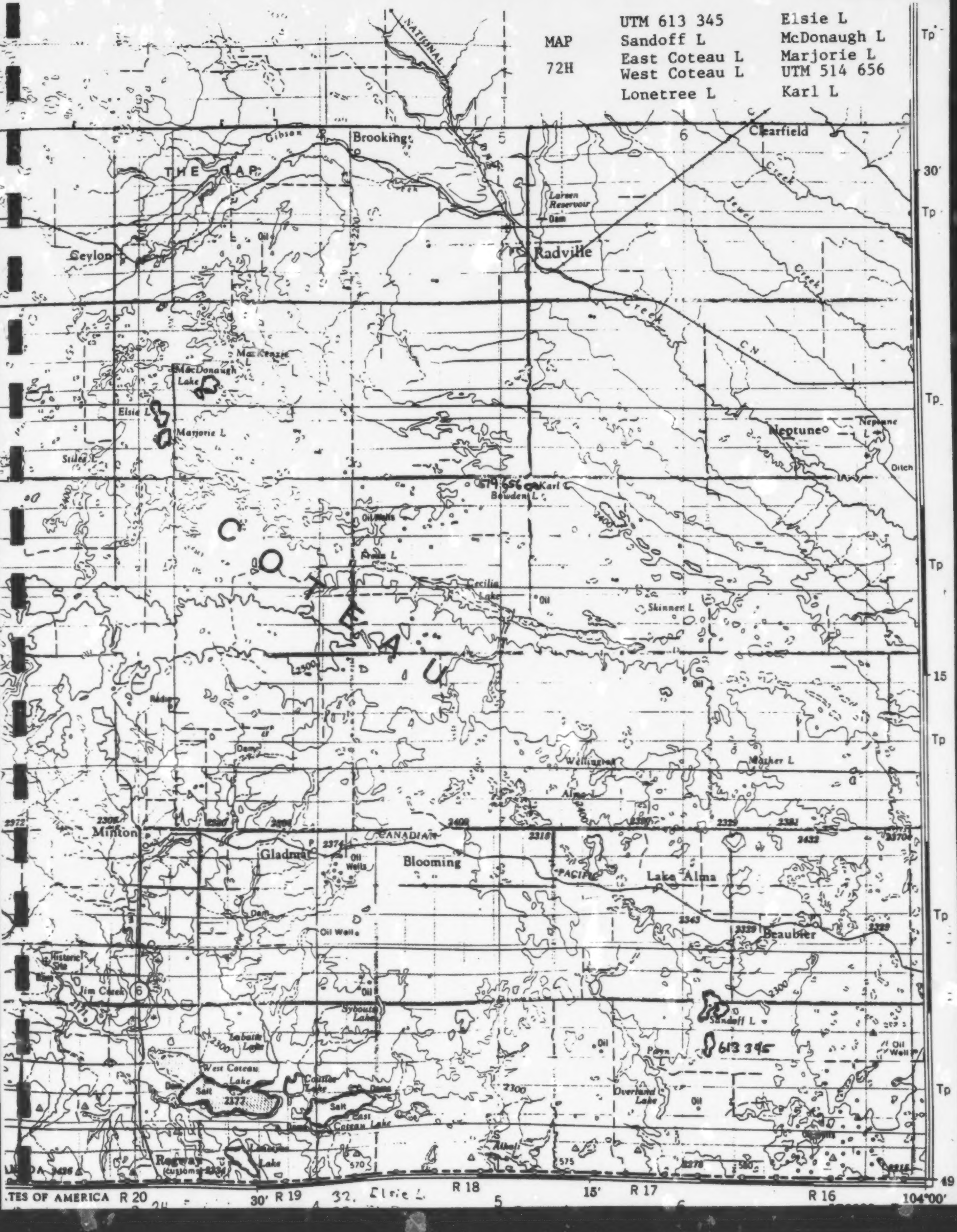
[1] Unnamed sites are identified by Universal Transverse Mercator (UTM) grid number.

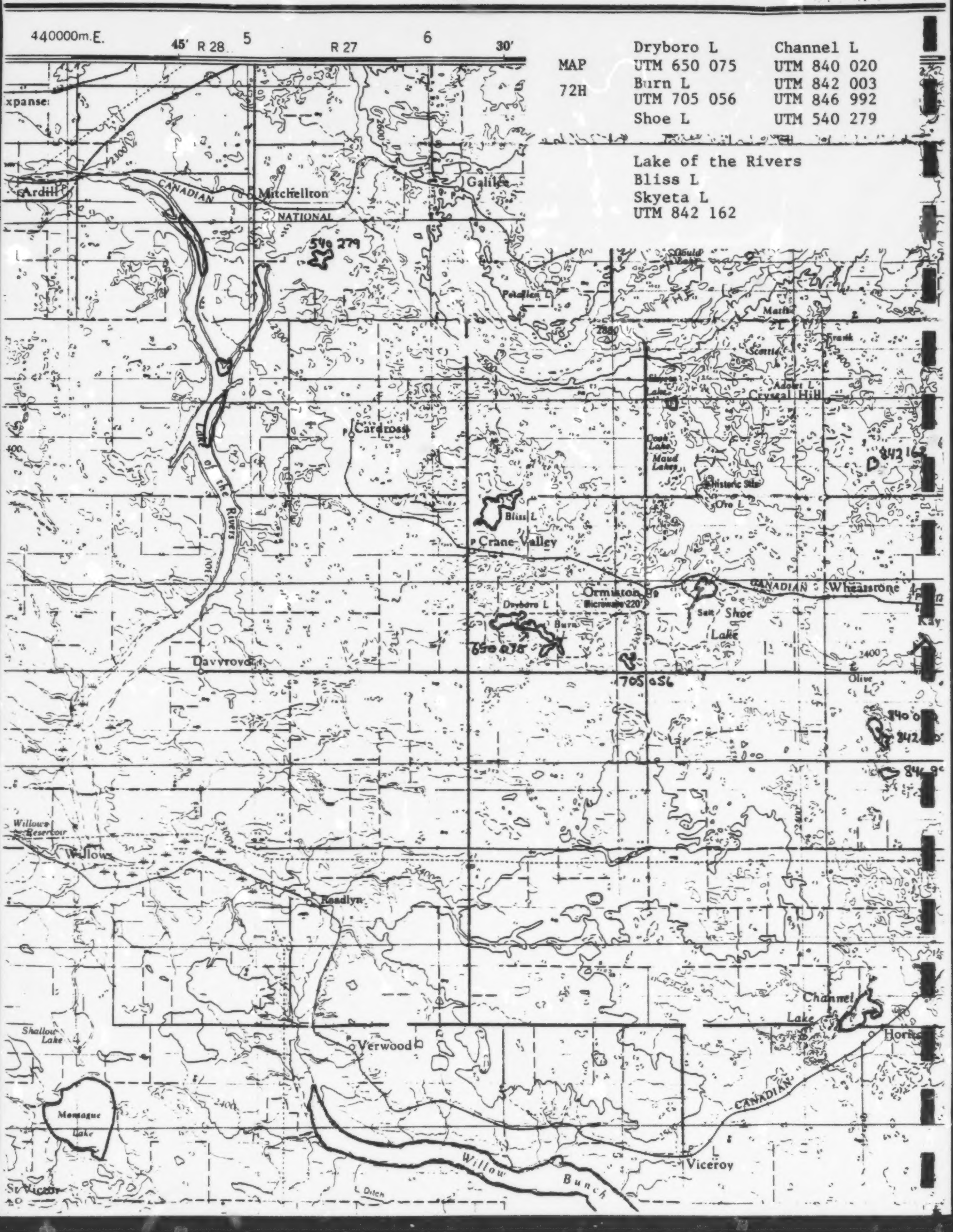
MAP

72H

UTM 613 345
Sandoff L
East Coteau L
West Coteau L
Lonetree L

Elsie L
McDonaugh L
Marjorie L
UTM 514 656
Karl L


NATIONAL
THE GAP
Gibson
Brooking
Clearfield
Larsen Reservoir
Dam
Jewel Creek
Ceylon
Oil
Radville
Creek
CN
MacKenzie L
MacDonaugh Lake
Elsie L
Marjorie L
Stiles L
Neptune
Neptune L
Ditch
514 656
Karl L
Bowden L
Oil Wells
C O T E A U
Cecilia Lake
Skinner L
2300
Radio
Wellington
Mother L
Alma L
2400
Minton
Gladmar
CANADIAN
PACIFIC
Blooming
Lake Alma
Oil Wells
Dam
Oil Well
Beaubier
2343
2329
Historic Site
Jim Creek
6
Oil
Sybouts Lake
Labatte Lake
Sandoff L
613 345
Penn L
Oil Well
West Coteau Lake
Salt
2377
Coulter Lake
Salt
East Coteau Lake
Overland Lake
Regway customs
Lonetree Lake
Alkali
Gollins
570
575
2318
2316
2322
2381
2432
2370
2374
2372
2308
2320
2306
2400
.TES OF AMERICA
R 20
30'
R 19
32.
Elsie L
R 18
5
15'
R 17
6
R 16
104°00'
49
Tp
30'
Tp
Tp
Tp
15
Tp
Tp
Tp



440000m.E.
45'
R 28
5
R 27
6
30'
xpanse:
Ardill
CANADIAN
Mitchellton
NATIONAL
Galilee
2300
2600
540 279
Gould Lake
THE
Scottie
Frank
Skyeta Lake
Adobe L
Crystal Hill
Cardross
Lake of the Rivers
Cook Lake
Maud Lakes
Historic Site
Oro L
843 162
Bliss L
Crane Valley
Ormiston
Microwave 220'
CANADIAN
Wheatstone
Kay
Dryboro L
Burn
650 075
Salt
Shoe Lake
705 056
2400
Olive L
840 020
842 003
846 992
Davyroyd
Willows Reservoir
Willows
Readlyn
Shallow Lake
Verwood
Montague Lake
Channel Lake
CANADIAN
Viceroy
Willow Bunch
St Victor
L Ditch

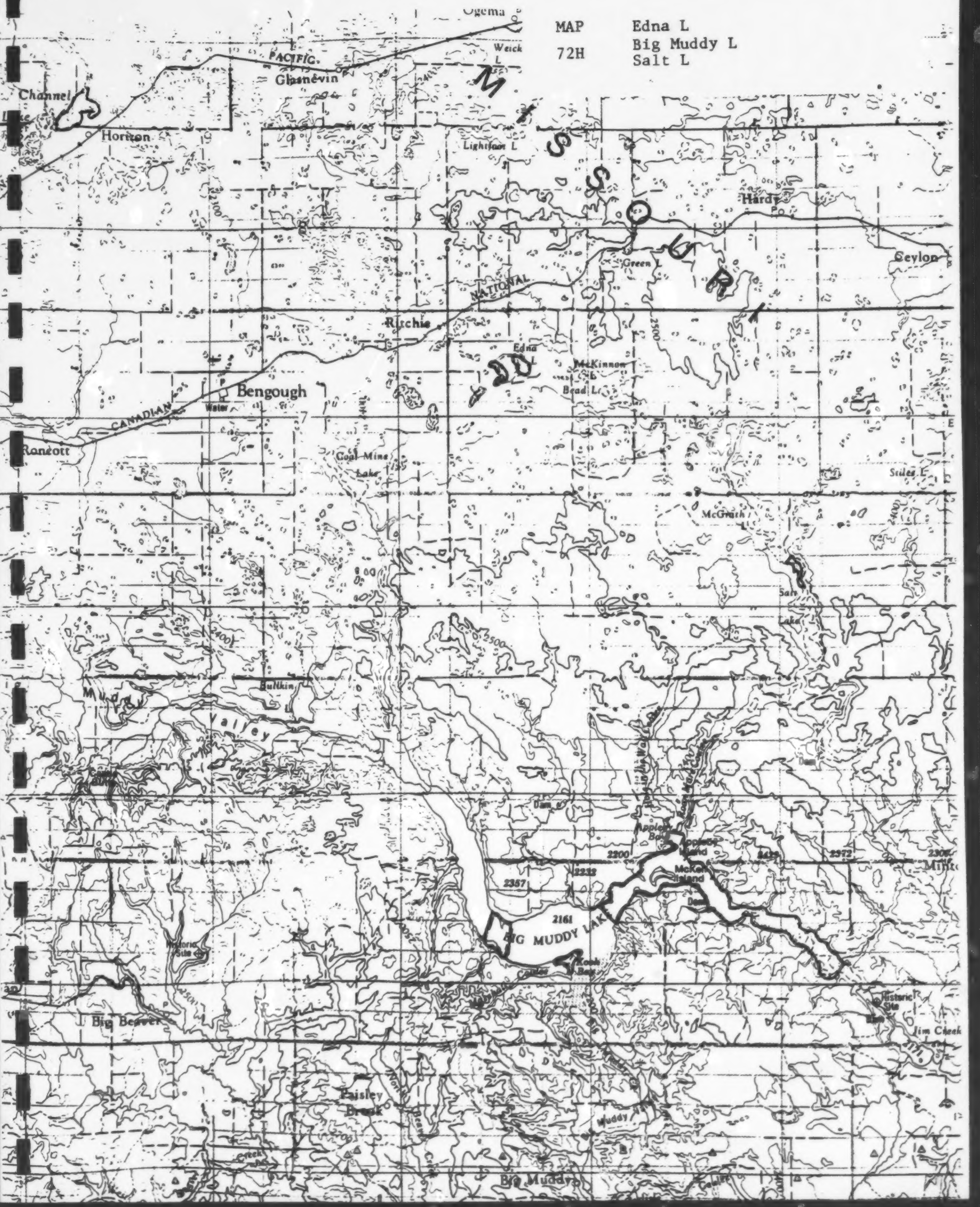
MAP
72H

Dryboro L	Channel L
UTM 650 075	UTM 840 020
Burn L	UTM 842 003
UTM 705 056	UTM 846 992
Shoe L	UTM 540 279

Lake of the Rivers
Bliss L
Skyeta L
UTM 842 162

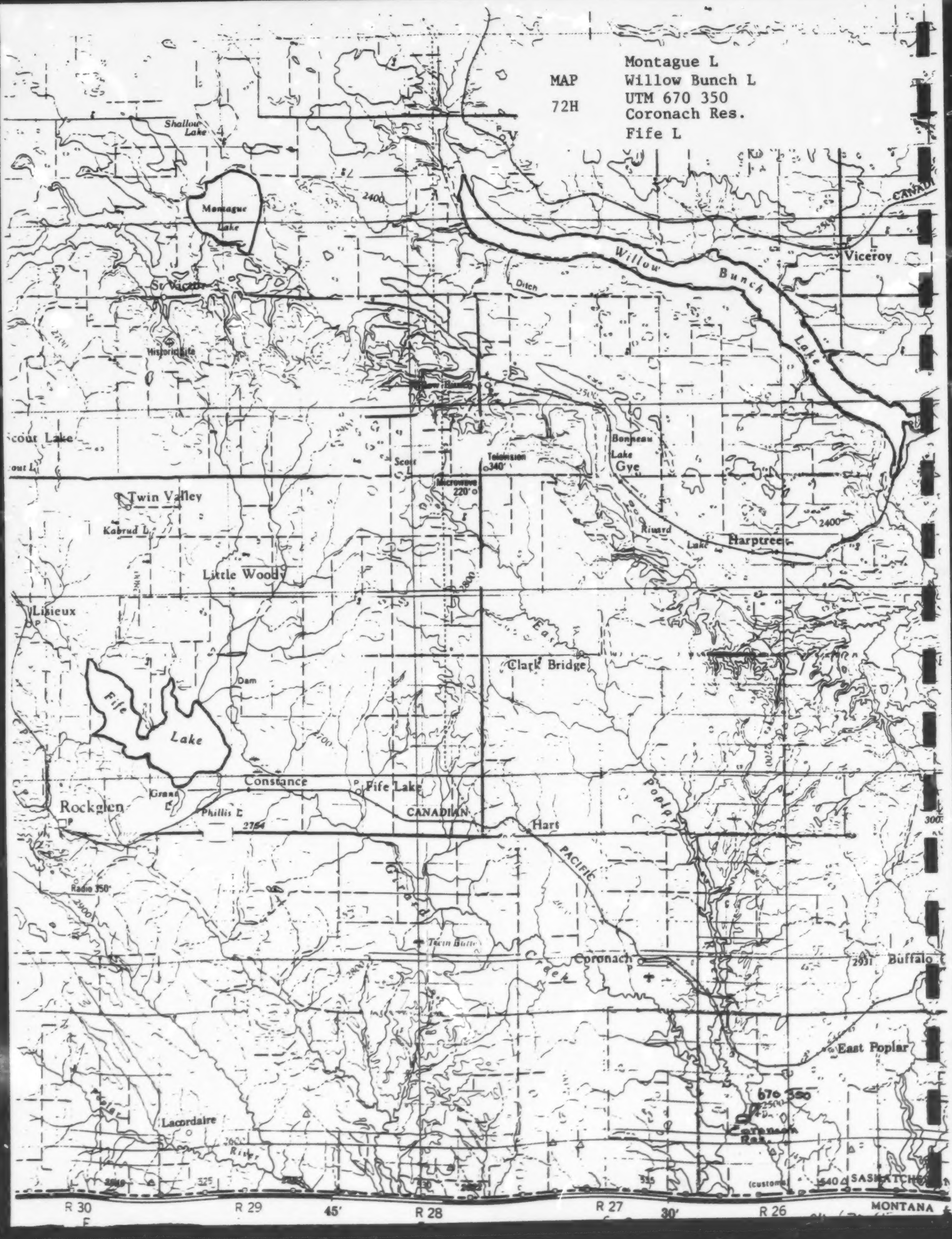
MAP 72H

Edna L
Big Muddy L
Salt L


Ogema
PACIFIC
Weick L
Glasnevin
Channel Lake
Horizon
MISSOURI COTEAU
Lightfoot L
Hardy
Ceylon
Green L
NATIONAL
Ritchie
Edna L
McKinnon L
Bead L
Bengough
Water
CANADIAN
Roncott
Coal Mine Lake
Stiles L
McGrath
Salt Lake
2500
2400
Bulkin L
Mud Valley
Dam
Appleby Bay
Appleby Island
McKell Island
2200
2357
2232
2372
2161
BIG MUDDY LAKE
Rook Bay
Minto
Historic Site
Jim Creek
Big Beaver
Paisley Brook
Muddy
Creek
Big Muddy
Coulee

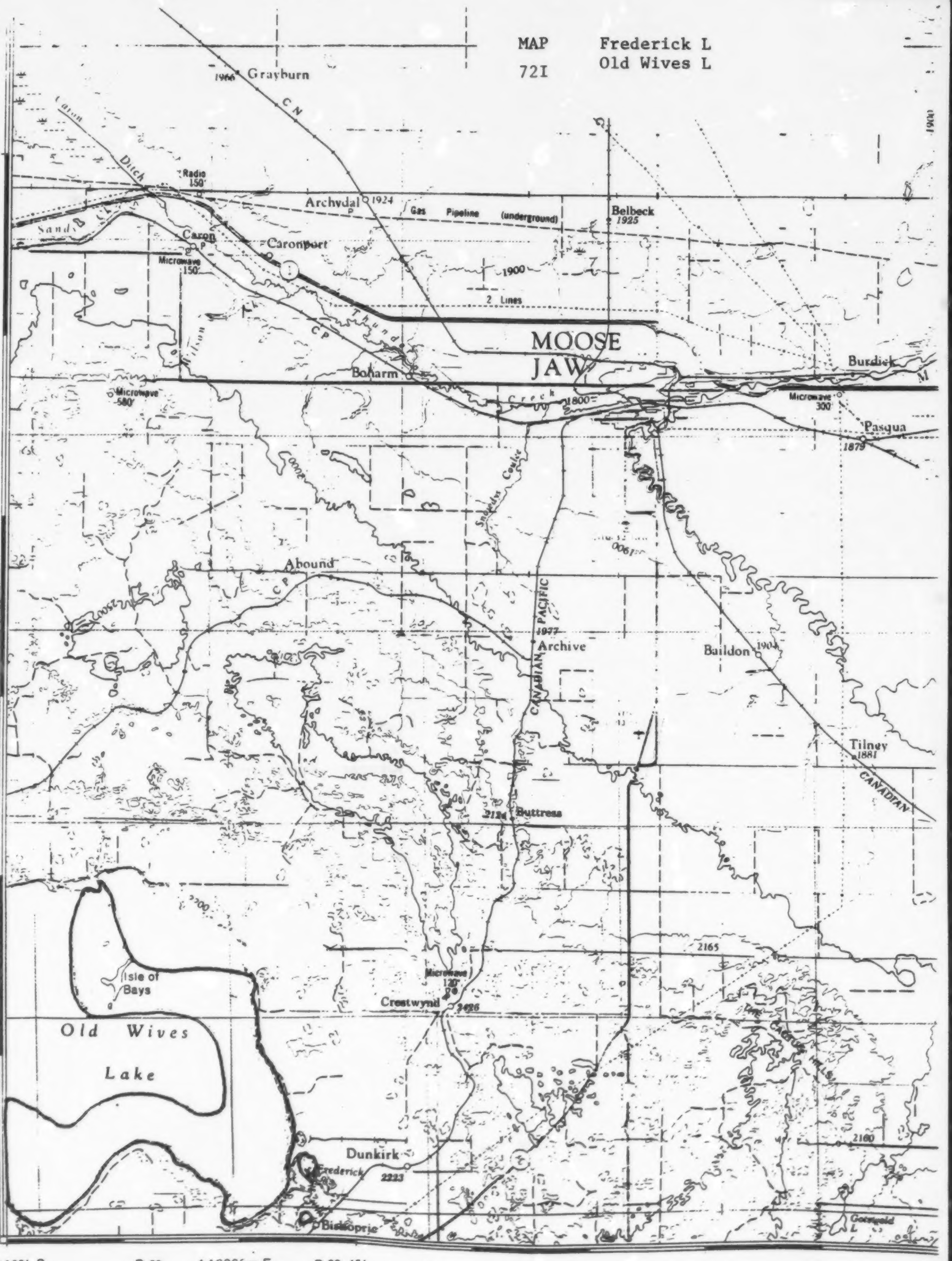
MAP 72H

Montague L
Willow Bunch L
UTM 670 350
Coronach Res.
Fife L

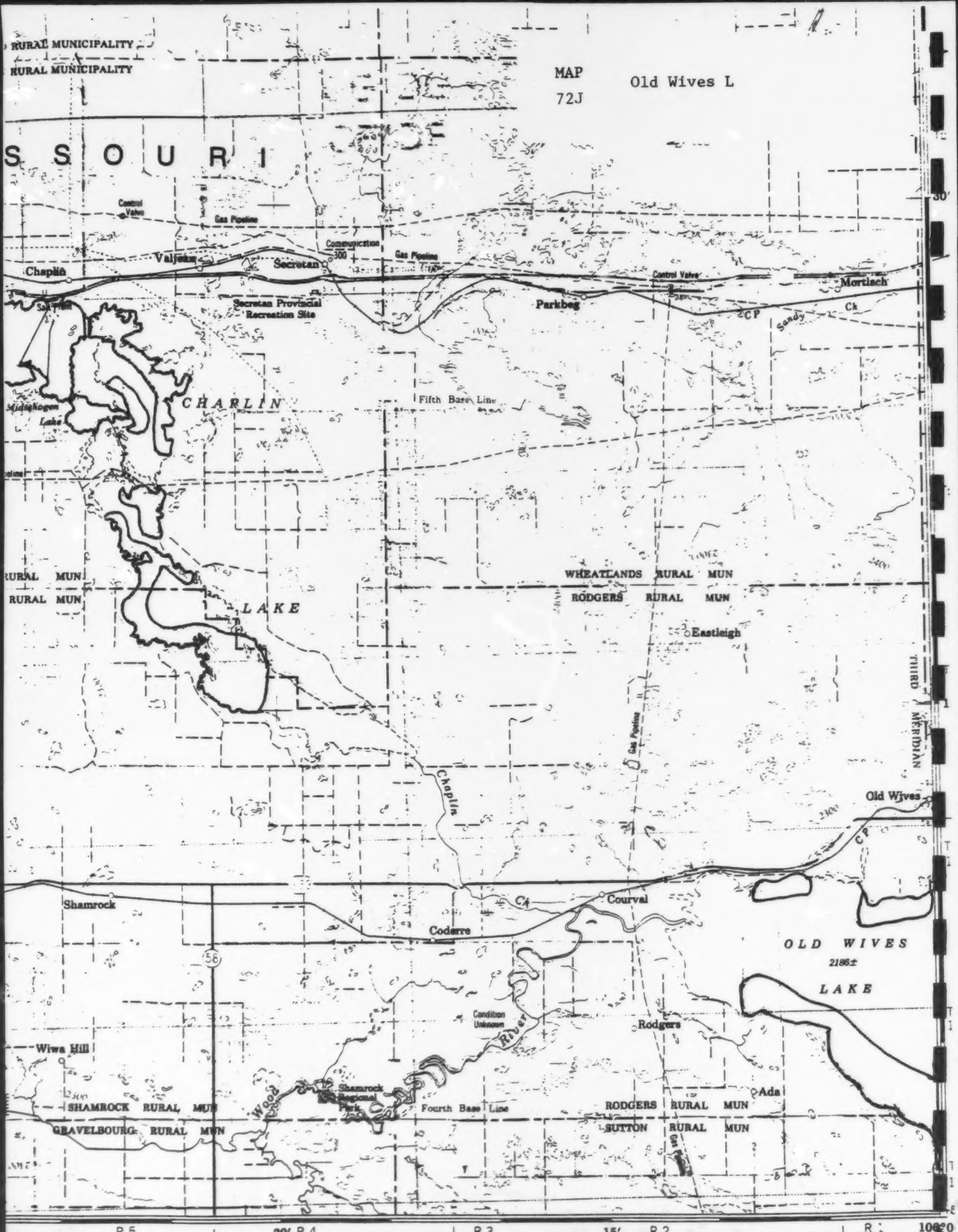

Shallow Lake
Montague Lake
2400
St Victor
Historic Site
Willow Bunch
Ditch
Willow Bunch Lake
CANADIAN
Viceroy
2500
Scout Lake
Scout L
Scott L
Television 340'
Microwave 220'
Bonneau Lake
Gye
Twin Valley
Kabrud L
Rivard Lake
Harptree
2400
Little Woody
2800
Lisieux
East
Clark Bridge
Dam
Fife Lake
2700
Constance
Fife Lake
Rockglen
Grand L
Phillis L
2754
CANADIAN
Hart
Poplar
PACIFIC
Radio 350'
2900
Twin Butte
Girard Creek
2800
Coronach
2931
Buffalo G
East Poplar
670 350
2500
Coronach Res.
Lacordaire
Poplar River
2600
325
330
325
(customs)
540
SASKATCHEWAN
300
R 30
R 29
45'
R 28
R 27
30'
R 26
MONTANA

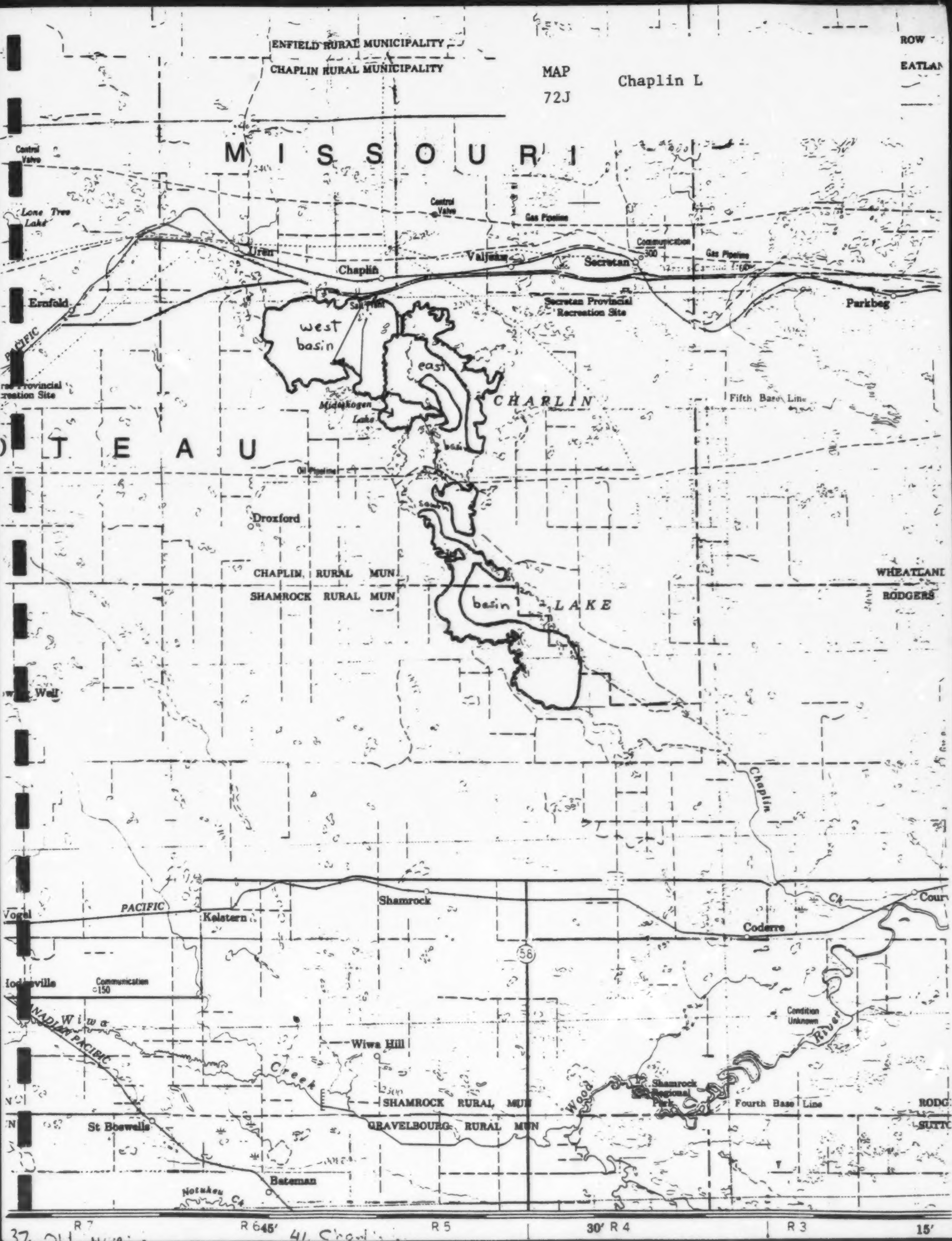
MAP 72I

Frederick L
Old Wives L


1966 Grayburn
CN
Caron Ditch
Radio 150'
Sandy Creek
Archydal 1924
Gas Pipeline (underground)
Belbeck 1925
Caron
Caronport
Microwave 150'
1900
2 Lines
Thunder Creek
Wilson Lk
CP
MOOSE JAW
Burdick
Boharm
Microwave 580'
Creek
1800
Microwave 300'
Pasqua 1879
Coteau Creek
Sevenday Coulee
1900
Abound
CP
CANADIAN PACIFIC
1977
Archive
Baildon 1904
Tilney 1881
CANADIAN
2124
Buttress
2200
2165
Isle of Bays
Microwave 120'
Crestwynd 2426
Old Wives Lake
CACTUS HILLS
2160
Dunkirk
Frederick
2223
Bishopric
Gooseweld L
30
15
50°00'
106°00' 3
R 29
440000m E.
R 28 45'
5
R 27
6
30' R 26
7
R 2

MAP 72J Old Wives L


RURAL MUNICIPALITY
RURAL MUNICIPALITY
S S O U R I
Control Valve
Gas Pipeline
Communication 300
Gas Pipeline
Chaplin
Valjean
Secretan
Control Valve
Mortlach
Secretan Provincial Recreation Site
Parkbeg
CP
Sandy Ck
Midtskogen Lake
CHAPLIN
Fifth Base Line
30'
RURAL MUN
RURAL MUN
WHEATLANDS RURAL MUN
RODGERS RURAL MUN
LAKE
Eastleigh
THIRD MERIDIAN
Gas Pipeline
Chaplin
Old Wives
CP
Shamrock
Ck
Courval
Coderre
58
OLD WIVES
2186±
LAKE
Condition Unknown
River
Rodgers
Wiwa Hill
Wood
Shamrock Regional Park
Fourth Base Line
Ada
SHAMROCK RURAL MUN
GRAVELBOURG RURAL MUN
RODGERS RURAL MUN
SUTTON RURAL MUN
Gas Pipeline
R 5
30'
R 4
R 3
15'
R 2
R 1
106°0

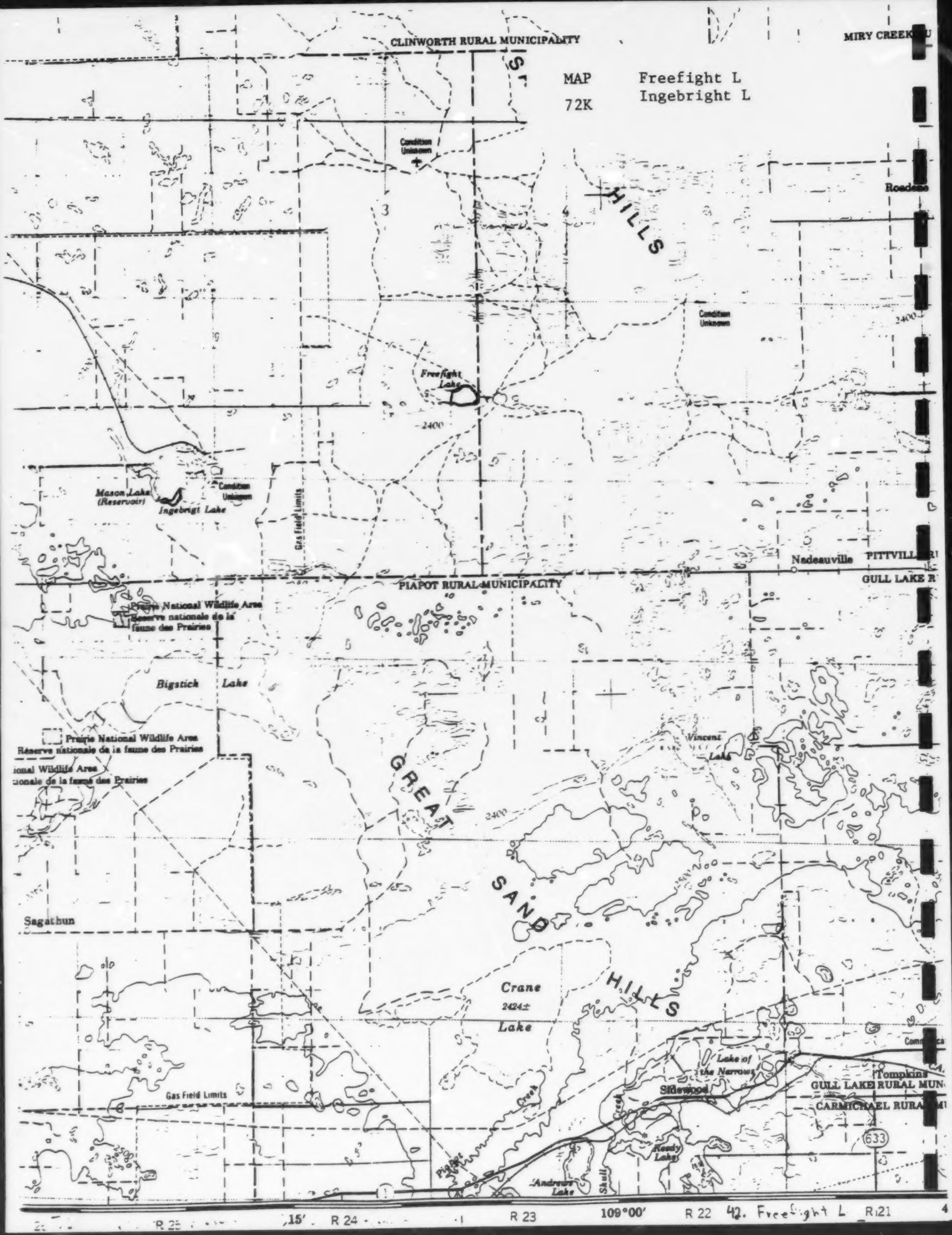

ENFIELD RURAL MUNICIPALITY
CHAPLIN RURAL MUNICIPALITY
MAP
72J
Chaplin L
ROW
EATLAN
Control Valve
MISSOURI
Lone Tree Lake
Control Valve
Gas Pipeline
Communication 300
Gas Pipeline
Uren
Valjean
Secretan
Chaplin
Ernfold
Secretan Provincial Recreation Site
Parkbeg
PACIFIC
Provincial
creation Site
west basin
east
Midtskogen Lake
CHAPLIN
Fifth Base Line
basin
TEAU
Oil Pipeline
Droxford
CHAPLIN RURAL MUN
SHAMROCK RURAL MUN
basin
LAKE
WHEATLAND
RODGERS
Well
Chaplin
PACIFIC
Vogel
Kelstern
Shamrock
Coderre
Cour
56
Hodgeville
Communication 150
CANADIAN PACIFIC
Wiwa Creek
Wiwa Hill
Condition Unknown
River
Wood
Shamrock Regional Park
Fourth Base Line
SHAMROCK RURAL MUN
GRAVELBOURG RURAL MUN
RODG
SUTTO
St Boswells
Bateman
Notukeu Ck
R 7
R 6
45′
R 5
30′
R 4
R 3
15′

37. Old Wives

41. Chaplin

MAP 72K

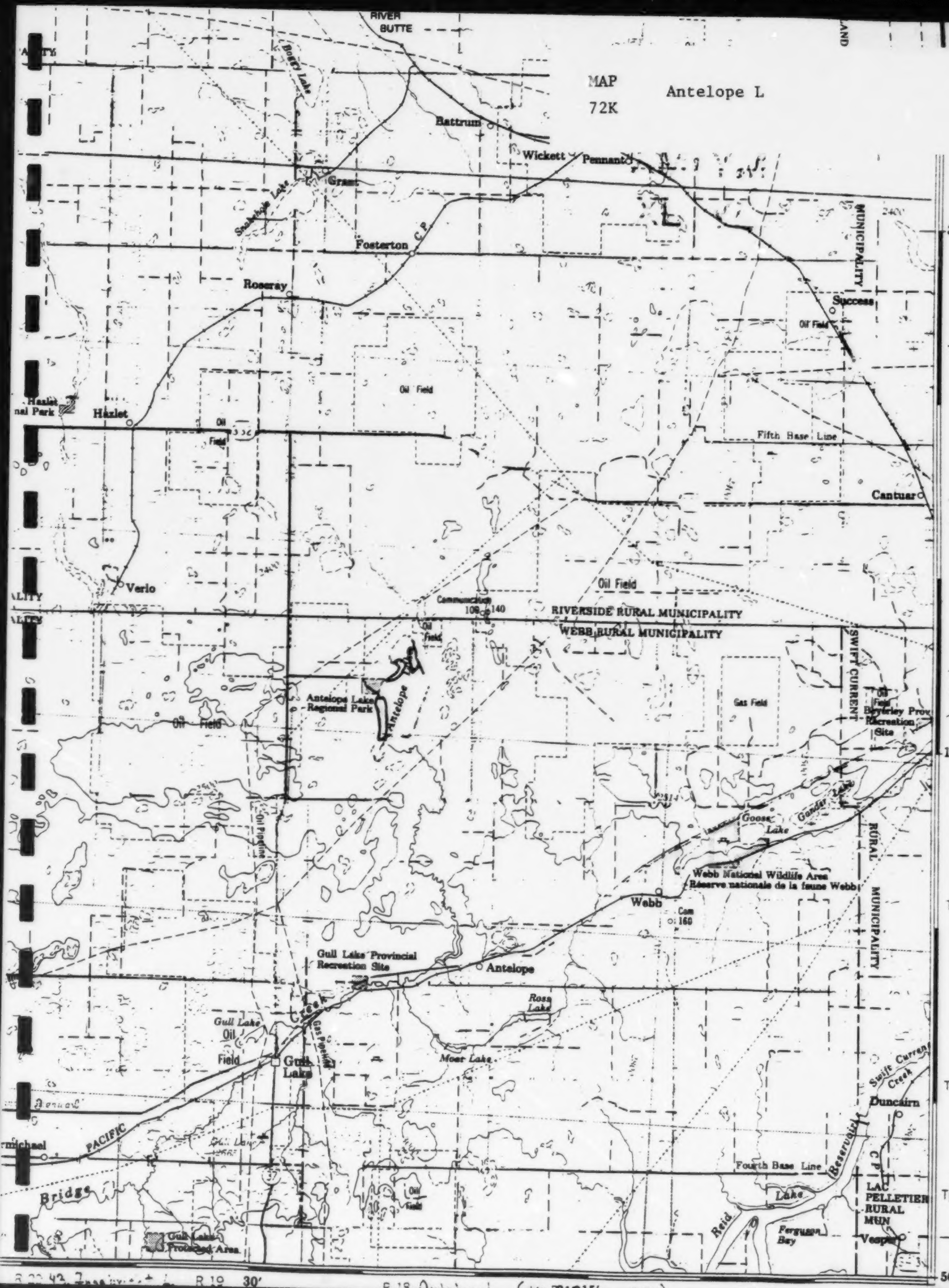
Freefight L
Ingebright L


CLINWORTH RURAL MUNICIPALITY
MIRY CREEK
Condition Unknown
3
4
HILLS
Roadene
Condition Unknown
2400
Freefight Lake
2400
Mason Lake (Reservoir)
Condition Unknown
Ingebrigt Lake
Gas Field Limits
Nadeauville
PITTVILLE
GULL LAKE R
PIAPOT RURAL MUNICIPALITY
Prairie National Wildlife Area
Réserve nationale de la faune des Prairies
Bigstick Lake
Prairie National Wildlife Area
Réserve nationale de la faune des Prairies
ional Wildlife Area
ionale de la faune des Prairies
Vincent Lake
GREAT
2400
SAND
HILLS
Sagathun
Crane 2424± Lake
Lake of the Narrows
Tompkins
GULL LAKE RURAL MUN
CARMICHAEL RURAL MU
Sidewood
Gas Field Limits
Creek
Creek
Reedy Lake
633
Piapot
1
Andrews Lake
Skull
R 25
15′
R 24
R 23
109°00′
R 22
R 21
4

42. Freefight L

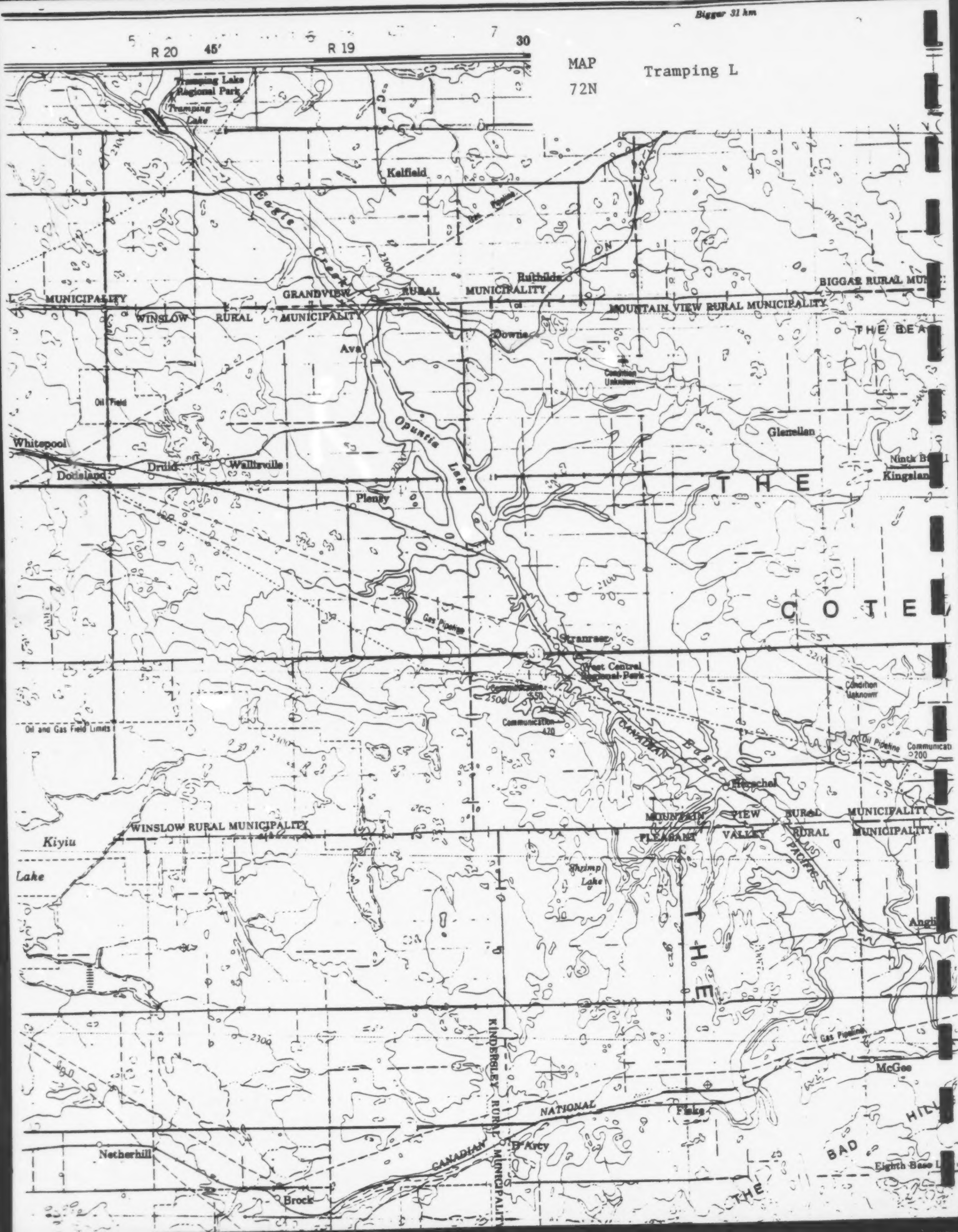
MAP
72K

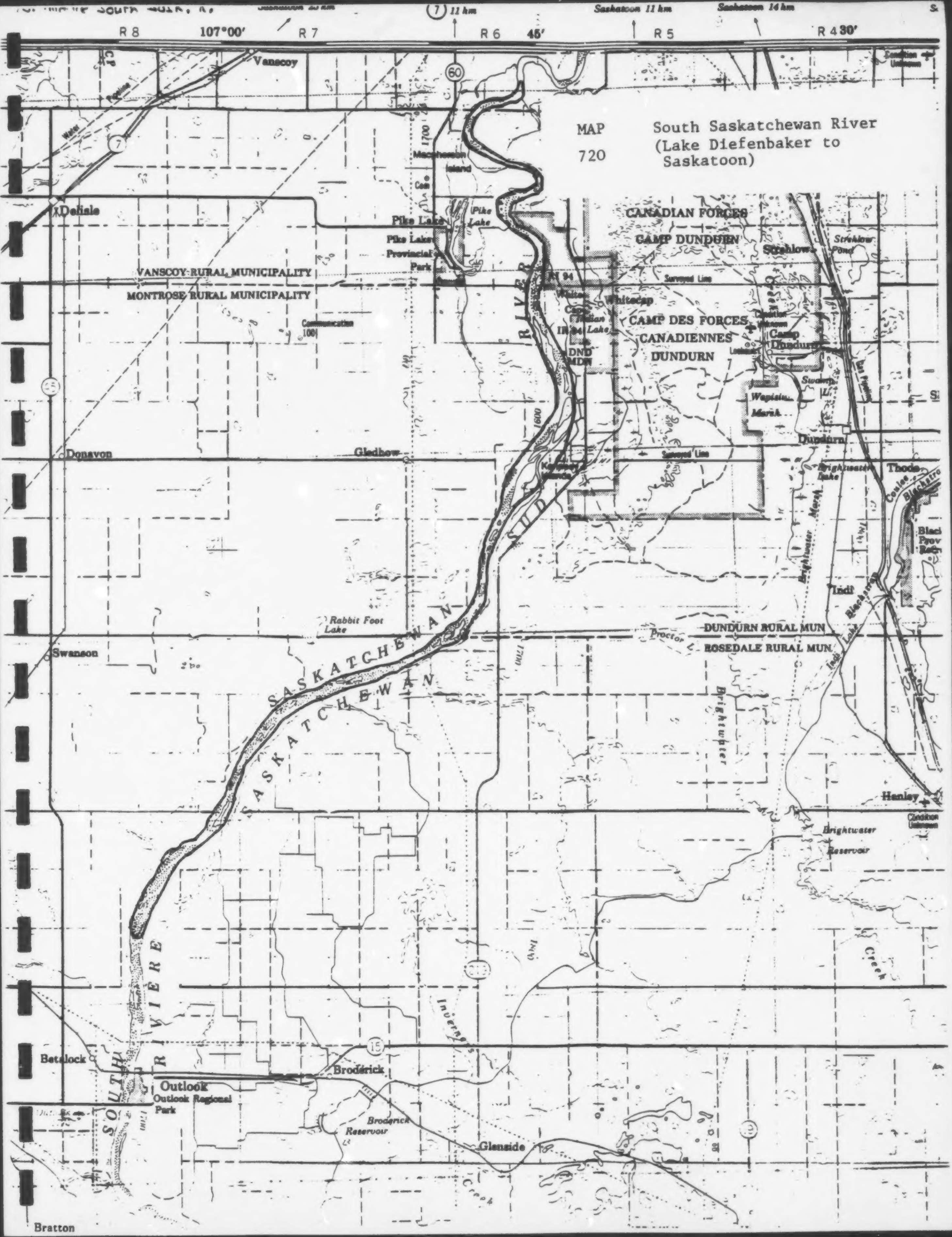
Antelope L


RIVER
BUTTE
Bone Lake
Battrum
Wickett
Pennant
Grant
Snakebite Lake
Fosterton
C.P.
Roseray
MUNICIPALITY
2400
30′
Success
Oil Field
Tp 1
Oil Field
Hazlet
Regional Park
Hazlet
Oil Field
Fifth Base Line
Cantuar
Tp 16
Verlo
Oil Field
Communication
109
140
RIVERSIDE RURAL MUNICIPALITY
WEBB RURAL MUNICIPALITY
Oil Field
SWIFT CURRENT
Tp 15
Gas Field
Antelope Lake Regional Park
Antelope
Oil Field
Oil Field
Beverley Provincial Recreation Site
15′
Oil Pipeline
Goose Lake
Gander Lake
RURAL
Webb National Wildlife Area
Réserve nationale de la faune Webb
MUNICIPALITY
Webb
Com 160
Tp
Gull Lake Provincial Recreation Site
Antelope
Ross Lake
Creek
Gull Lake
Oil Field
Gas Pipeline
Gull Lake
Moer Lake
Swift Current Creek
Tp
Duncairn
PACIFIC
Carmichael
Gull Lake
37
Fourth Base Line
Reservoir
C.P.
Oil Field
Bridge
Lake
LAC PELLETIER RURAL MUN
Tp
Reid
Ferguson Bay
Vesper
Gull Lake Protected Area
R 19
30′
R 18
15′
R 16
R 15
108°00′
50

MAP
72N

Tramping L


Biggar 31 km
5
R 20
45'
R 19
7
30
Tramping Lake Regional Park
Tramping Lake
Kelfield
Gas Pipeline
Eagle Creek
2300
Ruthilda
CN
BIGGAR RURAL MUN
MUNICIPALITY
GRANDVIEW RURAL MUNICIPALITY
WINSLOW RURAL MUNICIPALITY
MOUNTAIN VIEW RURAL MUNICIPALITY
THE BEA
Ava
Dewis
Condition Unknown
Oil Field
Opuntia Lake
Glenellan
Whitepool
Dodsland
Druid
Wallisville
Plenty
Ninth B
Kingslan
THE
COTE
2100
Gas Pipeline
Stranraer
West Central Regional Park
2500
Communication 550
Communication 470
2200
Condition Unknown
Oil and Gas Field Limits
CANADIAN
Eagle
Oil Pipeline
Communicati 200
Herschel
WINSLOW RURAL MUNICIPALITY
MOUNTAIN VIEW RURAL MUNICIPALITY
PLEASANT VALLEY RURAL MUNICIPALITY
PACIFIC
Kiyiu Lake
Shrimp Lake
THE
Angli
2300
KINDERSLEY RURAL MUNICIPALITY
Gas Pipeline
McGee
NATIONAL
Fiske
CANADIAN
D'Arcy
Netherhill
Brock
THE
BAD HILL
Eighth Base L

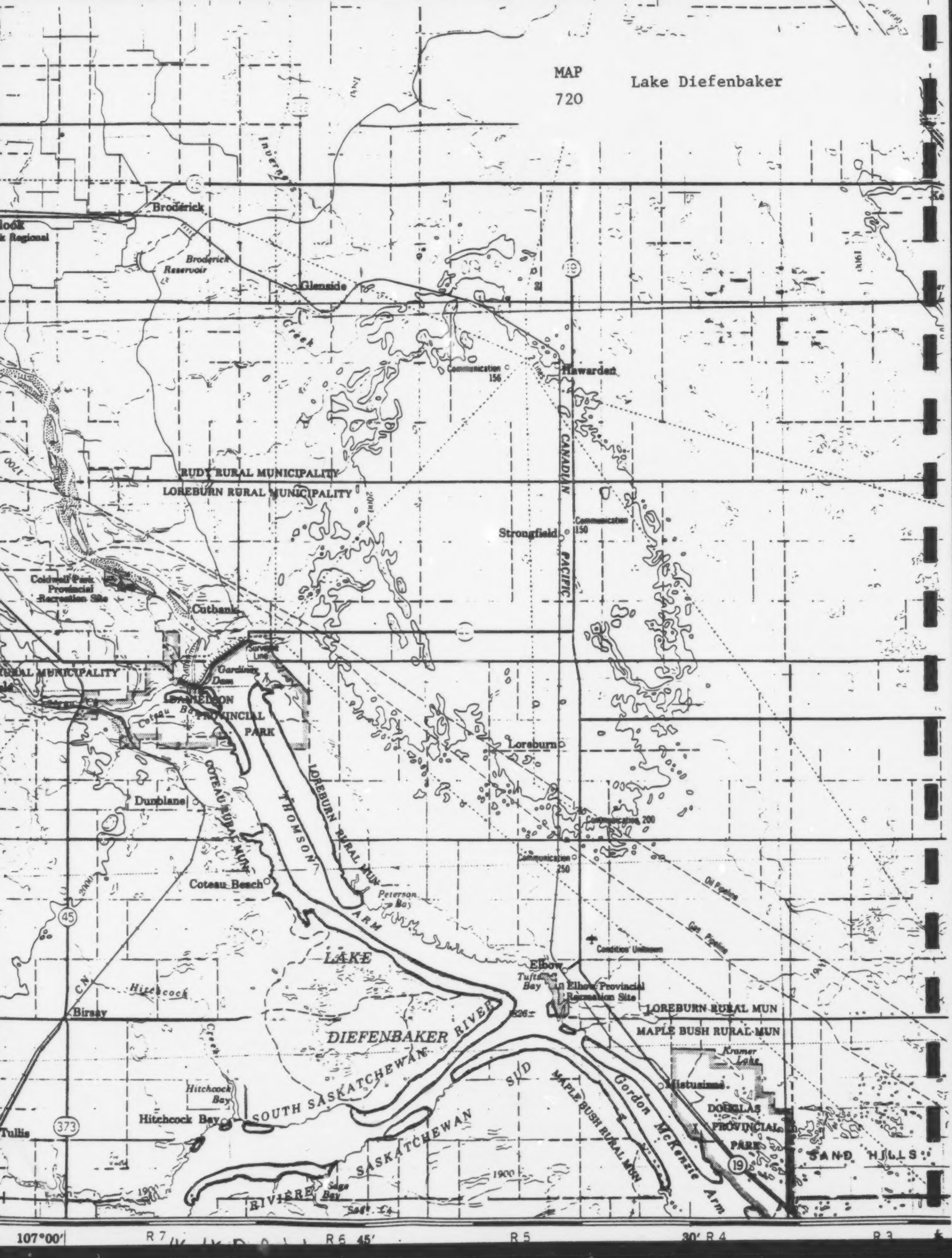


MAP 720 South Saskatchewan River (Lake Diefenbaker to Saskatoon)

Saskatoon 11 km
Saskatoon 14 km
R 8
107°00'
R 7
R 6
45'
R 5
R 4
30'
Vanscoy
Delisle
Macpherson Island
Pike Lake
Pike Lake Provincial Park
VANSCOY RURAL MUNICIPALITY
MONTROSE RURAL MUNICIPALITY
CANADIAN FORCES CAMP DUNDURN
CAMP DES FORCES CANADIENNES DUNDURN
Strehlow
Strehlow Pond
Whitecap
Indian Lake
IR 94
DND MDN
Camp Dundurn
Wapiti Marsh
Swamp L.
Dundurn
Surveyed Line
Donavon
Gledhow
Brightwater Lake
Thode
Blackstrap
Indi
Rabbit Foot Lake
Proctor L.
DUNDURN RURAL MUN
ROSEDALE RURAL MUN
SOUTH SASKATCHEWAN RIVER
RIVIERE SASKATCHEWAN SUD
Swanson
Brightwater
Henley
Condition Unknown
Brightwater Reservoir
Brightwater Creek
Inverness
Betalock
Outlook
Outlook Regional Park
Broderick
Broderick Reservoir
Glenside
Bratton

MAP
720

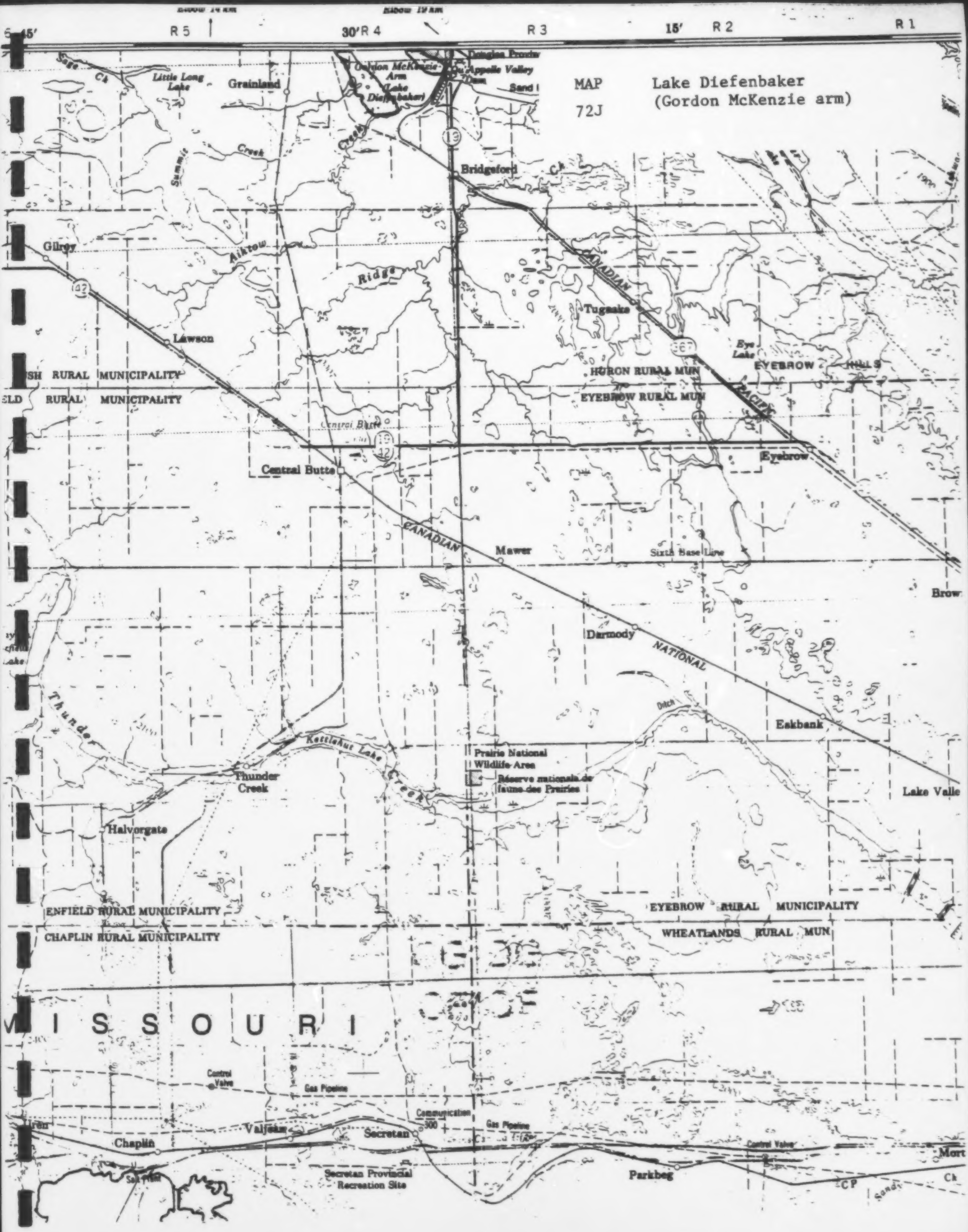
Lake Diefenbaker

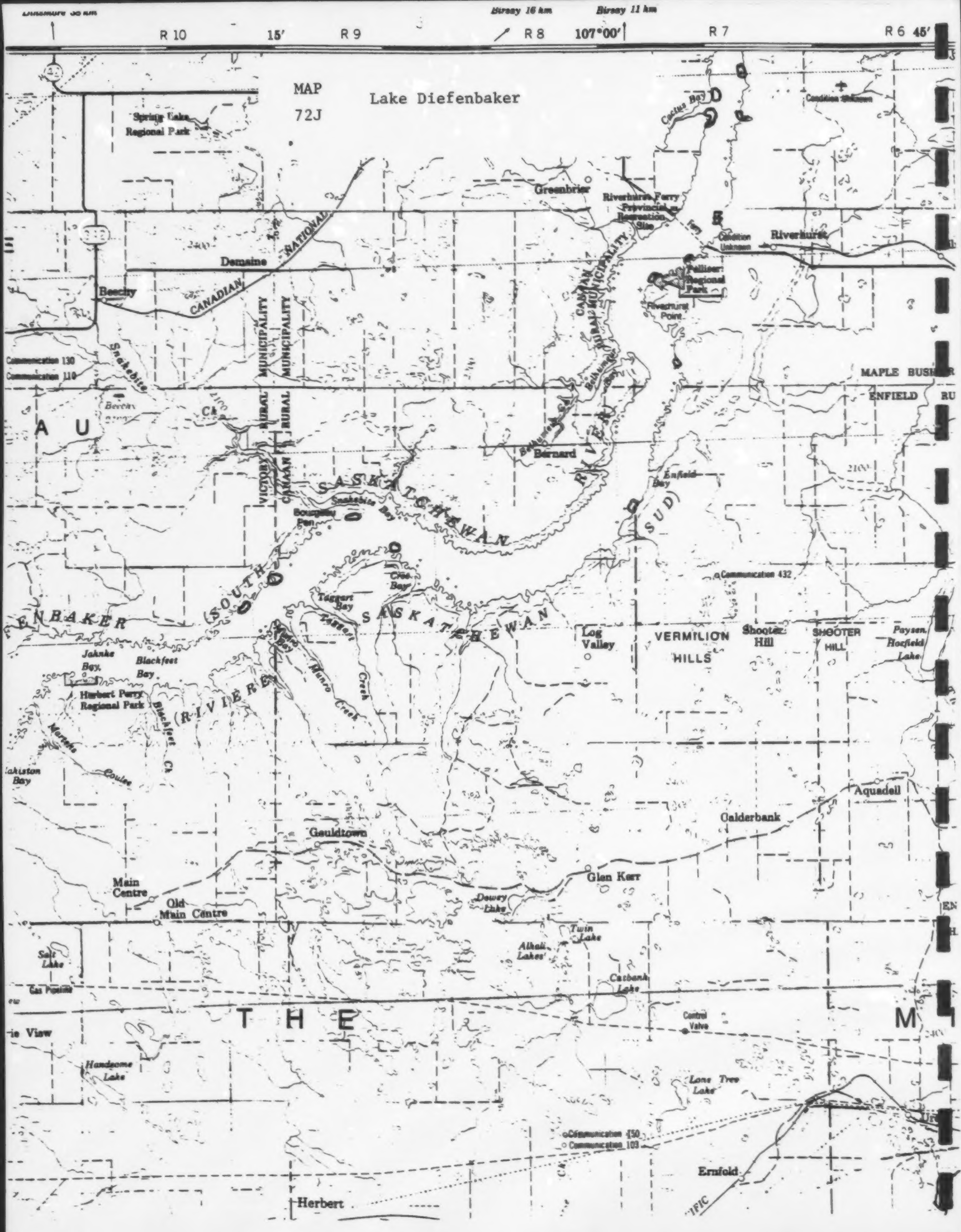


Broderick
Broderick Reservoir
Inverness
Glenside
Creek
Communication 156
Hawarden
19
RUDY RURAL MUNICIPALITY
LOREBURN RURAL MUNICIPALITY
CANADIAN PACIFIC
Strongfield
Communication 150
Coldwell Park Provincial Recreation Site
Cutbank
Survey Line
Gardiner Dam
RURAL MUNICIPALITY
DANIELSON PROVINCIAL PARK
Coteau Bay
COTEAU RURAL MUN
LOREBURN RURAL MUN
THOMSON ARM
Loreburn
Dunblane
Communication 200
Communication 250
Oil Pipeline
Gas Pipeline
Coteau Beach
Peterson Bay
45
LAKE DIEFENBAKER
Conditions Unknown
Elbow
Tufts Bay
Elbow Provincial Recreation Site
526
LOREBURN RURAL MUN
MAPLE BUSH RURAL MUN
CN
Hitchcock
Birsay
Creek
SOUTH SASKATCHEWAN RIVER
RIVIÈRE SASKATCHEWAN SUD
Kramer Lake
Mistusinne
DOUGLAS PROVINCIAL PARK
MAPLE BUSH RURAL MUN
Gordon McKenzie Arm
SAND HILLS
Hitchcock Bay
Hitchcock Bay
373
Tullis
Sage Bay
1900
1700
2000
107°00′
R 7
R 6
45′
R 5
30′ R 4
R 3

MAP 72J

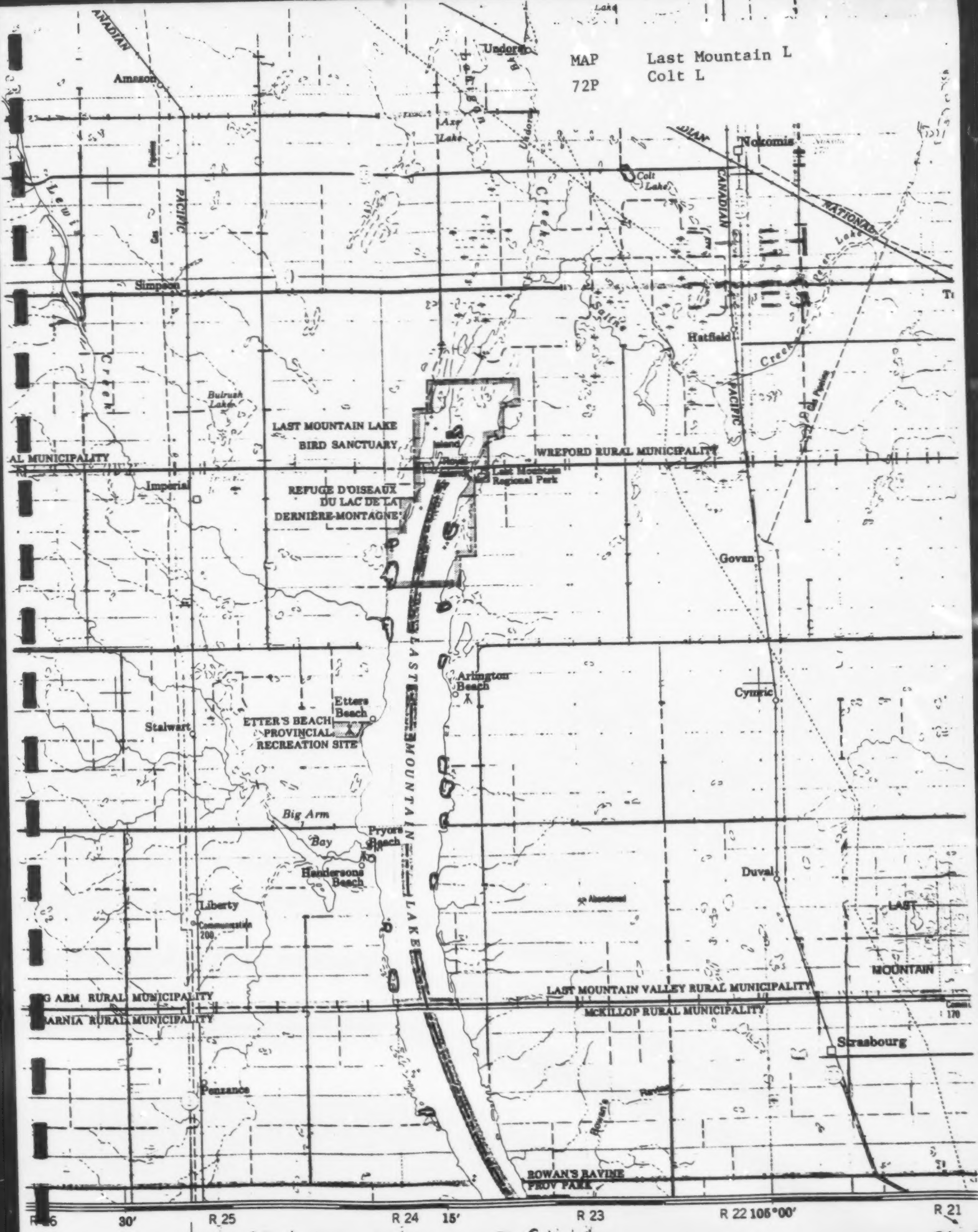
Lake Diefenbaker
(Gordon McKenzie arm)


Elbow 14 km
Elbow 19 km
45′
R 5
30′ R 4
R 3
15′
R 2
R 1
Sage Ck
Little Long Lake
Grainland
Gordon McKenzie Arm (Lake Diefenbaker)
Douglas Provincial
Qu'Appelle Valley Dam
Sand
Summit Creek
Creek
19
Bridgeford
Ck
Gilroy
42
Aiktow
Ridge
CANADIAN
Tugaske
367
Eye Lake
EYEBROW HILLS
Lawson
HURON RURAL MUN
EYEBROW RURAL MUN
PACIFIC
RURAL MUNICIPALITY
RURAL MUNICIPALITY
Central Butte
19
42
Eyebrow
Central Butte
CANADIAN
Mawer
Sixth Base Line
Brow
Darmody
NATIONAL
Thunder Creek
Ditch
Eskbank
Kettlehut Lake Creek
Prairie National Wildlife Area
Réserve nationale de faune des Prairies
Thunder Creek
Lake Valle
Halvorgate
ENFIELD RURAL MUNICIPALITY
CHAPLIN RURAL MUNICIPALITY
EYEBROW RURAL MUNICIPALITY
WHEATLANDS RURAL MUN
MISSOURI COTEAU
Control Valve
Gas Pipeline
Communication 300
Gas Pipeline
Uren
Valjean
Secretan
Chaplin
Control Valve
Mort
Salt Plant
Secretan Provincial Recreation Site
Parkbeg
CP
Sandy
Ck


Dinsmore 38 km
Birsay 16 km
Birsay 11 km
R 10
15′
R 9
R 8
107°00′
R 7
R 6
45′
42
MAP
72J
Lake Diefenbaker
Spring Lake Regional Park
Cactus Bay
Condition Unknown
Greenbrier
Riverhurst Ferry Provincial Recreation Site
Riverhurst
Condition Unknown
Palliser Regional Park
Riverhurst Point
Demaine
Beechy
CANADIAN NATIONAL
VICTORY RURAL MUNICIPALITY
CANAAN RURAL MUNICIPALITY
CANAAN RURAL MUNICIPALITY
Snakebite
Communication 130
Communication 110
Beechy
AU
Bernard
MAPLE BUSH
ENFIELD
SASKATCHEWAN
Snakebite Bay
Bourgeau Pen
RIVER
Enfield Bay
SUD
SOUTH
Coo Bay
Taggart Bay
Taggart Creek
Munro Bay
Munro Creek
SASKATCHEWAN
Communication 432
ENBAKER
Jahnke Bay
Blackfoot Bay
Herbert Ferry Regional Park
Blackfoot Ck
RIVIERE
Log Valley
VERMILION HILLS
Shooter Hill
SHOOTER HILL
Paysen Hoefield Lake
Morrison Coulee
Lakiston Bay
Aquadell
Calderbank
Gauldtown
Main Centre
Old Main Centre
Glen Kerr
Dewey Lake
Twin Lake
Alkali Lakes
Salt Lake
Gas Pipeline
Catbank Lake
THE
M
Control Valve
ie View
Handsome Lake
Lone Tree Lake
Communication 150
Communication 103
Ernfold
Herbert
IFIC

MAP Last Mountain L

72P Colt L

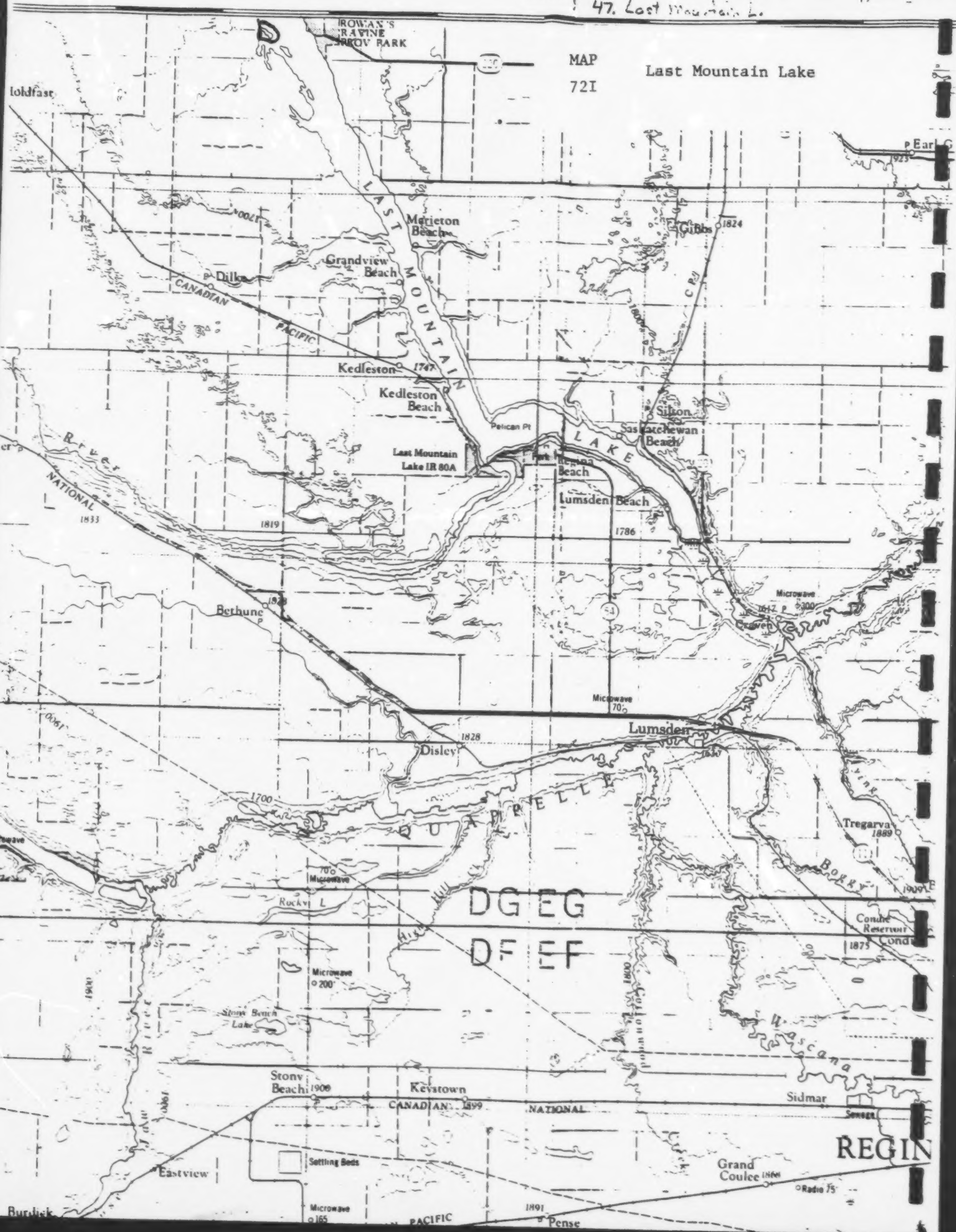

CANADIAN
Amazon
Undora
Lake
Axe Lake
Pigeon
Undora
Creek
Nokomis
Colt Lake
CANADIAN
NATIONAL
PACIFIC
Lewis
Simpson
Saline
Creek
Hatfield
Creek
Lake
PACIFIC
Creek
Bulrush Lake
LAST MOUNTAIN LAKE
BIRD SANCTUARY
Island
AL MUNICIPALITY
WREFORD RURAL MUNICIPALITY
Last Mountain Regional Park
Imperial
REFUGE D'OISEAUX
DU LAC DE LA
DERNIÈRE-MONTAGNE
Govan
LAST MOUNTAIN LAKE
Arlington Beach
Cymric
Etters Beach
Stalwart
ETTER'S BEACH
PROVINCIAL
RECREATION SITE
Big Arm
Bay
Pryors Beach
Hendersons Beach
Duval
Abandoned
Liberty
Communication 200
LAST
MOUNTAIN
G ARM RURAL MUNICIPALITY
LAST MOUNTAIN VALLEY RURAL MUNICIPALITY
ARNIA RURAL MUNICIPALITY
McKILLOP RURAL MUNICIPALITY
Strasbourg
Penzance
Rowan's
Ravine
ROWAN'S RAVINE
PROV PARK
R 26
30'
R 25
R 24
15'
R 23
R 22 105°00'
R 21

47. Last Mountain L.

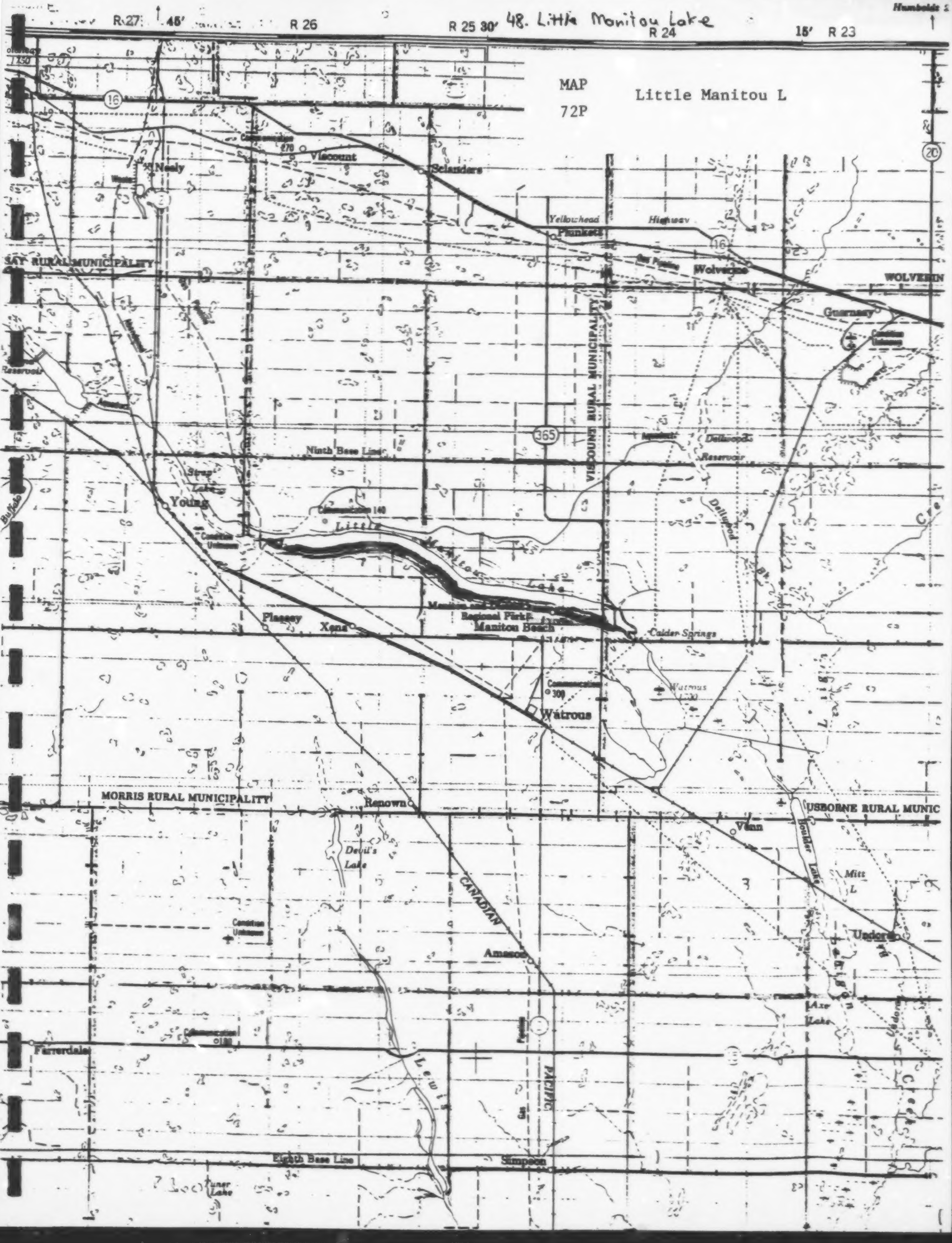
MAP

72I

Last Mountain Lake

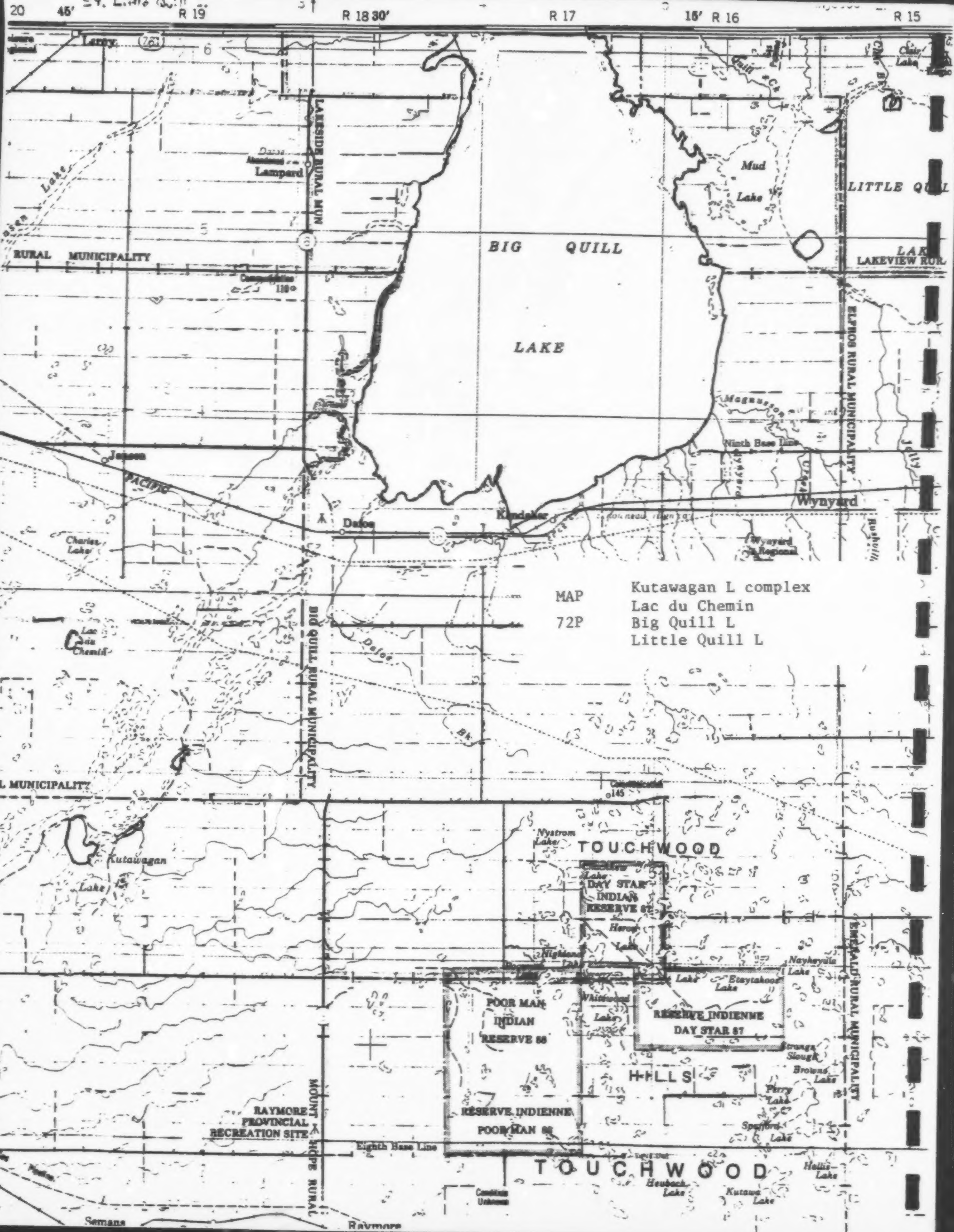

ROWAN'S RAVINE PROV PARK
Holdfast
Earl G
1923
LAST MOUNTAIN LAKE
Marieton Beach
Gibbs
1824
Grandview Beach
Dilke
CANADIAN PACIFIC
1700
1800
CPR
Kedleston
1747
Kedleston Beach
Silton
Pelican Pt
Saskatchewan Beach
Last Mountain Lake IR 80A
Regina Beach
Lumsden Beach
River
NATIONAL
1833
1819
1786
Microwave
1617
300
Craven
Bethune
1828
54
Microwave 70
Lumsden
Disley
1828
1700
QU'APPELLE
Tregarva
1889
Boggy
70 Microwave
Rocky L
DG EG
DF EF
Condie Reservoir
Condie
1875
1909
Microwave 200
1900
Stony Beach Lake
River
Cottonwood
Wascana
Stony Beach
1900
Keystown
1899
CANADIAN NATIONAL
Sidmar
Sewage
REGIN
1861
Settling Beds
Eastview
Grand Coulee
1866
Radio 75
Burdick
Microwave 165
PACIFIC
1891
Pense

48. Little Manitou Lake



MAP
72P
Little Manitou L
R 27
45′
R 26
R 25 30′
R 24
15′
R 23
Humboldt
16
20
Viscount
Neely
Sclanders
Yellowhead
Highway
Plunkett
Wolverine
WOLVERIN
Guernsey
SAY RURAL MUNICIPALITY
VISCOUNT RURAL MUNICIPALITY
365
Reservoir
Ninth Base Line
Strap Lake
Young
Dellwood Reservoir
Dellwood
Little Manitou Lake
Manitou and District Regional Park
Manitou Beach
Calder Springs
Plessey
Xena
Watrous
Communication 300
Cre
MORRIS RURAL MUNICIPALITY
Renown
USBORNE RURAL MUNIC
Venn
Devil's Lake
Boulder Lake
Mitt L
Undora
CANADIAN
Amazon
PACIFIC
Axe Lake
Farrerdale
Lewis
Eighth Base Line
Simpson
Turner Lake
Creek
Buffalo

54. Little Quill


20
45'
R 19
R 18 30'
R 17
15' R 16
R 15
Leroy
761
6
5
4
Lampard
LAKESIDE RURAL MUN
RURAL MUNICIPALITY
Lakes
BIG QUILL
LAKE
Mud
Lake
LITTLE QU
LAKEVIEW RUR
Quill Cr
Clair Lake
ELFROS RURAL MUNICIPALITY
Magnusson
Ninth Base Line
Wynyard
Wynyard Regional
Jansen
PACIFIC
Dafoe
Kandahar
Charles Lake
Lac du Chemin
BIG QUILL RURAL MUNICIPALITY
Dafoe
Br
RAL MUNICIPALITY
145
Kutawagan
Lake
Nystrom Lake
TOUCHWOOD
DAY STAR INDIAN RESERVE 87
Heron Lake
Highland Lake
Whitewood Lake
Etsyiakoos Lake
Nayheyulla Lake
POOR MAN INDIAN RESERVE 88
RESERVE INDIENNE DAY STAR 87
Strange Slough
Browns Lake
HILLS
Perry Lake
Spanford Lake
RAYMORE PROVINCIAL RECREATION SITE
MOUNT HOPE RURAL
RESERVE INDIENNE POOR MAN 88
Eighth Base Line
TOUCHWOOD
Heubach Lake
Kutawa Lake
Hollis Lake
EMERALD RURAL MUNICIPALITY
Semans
Raymore

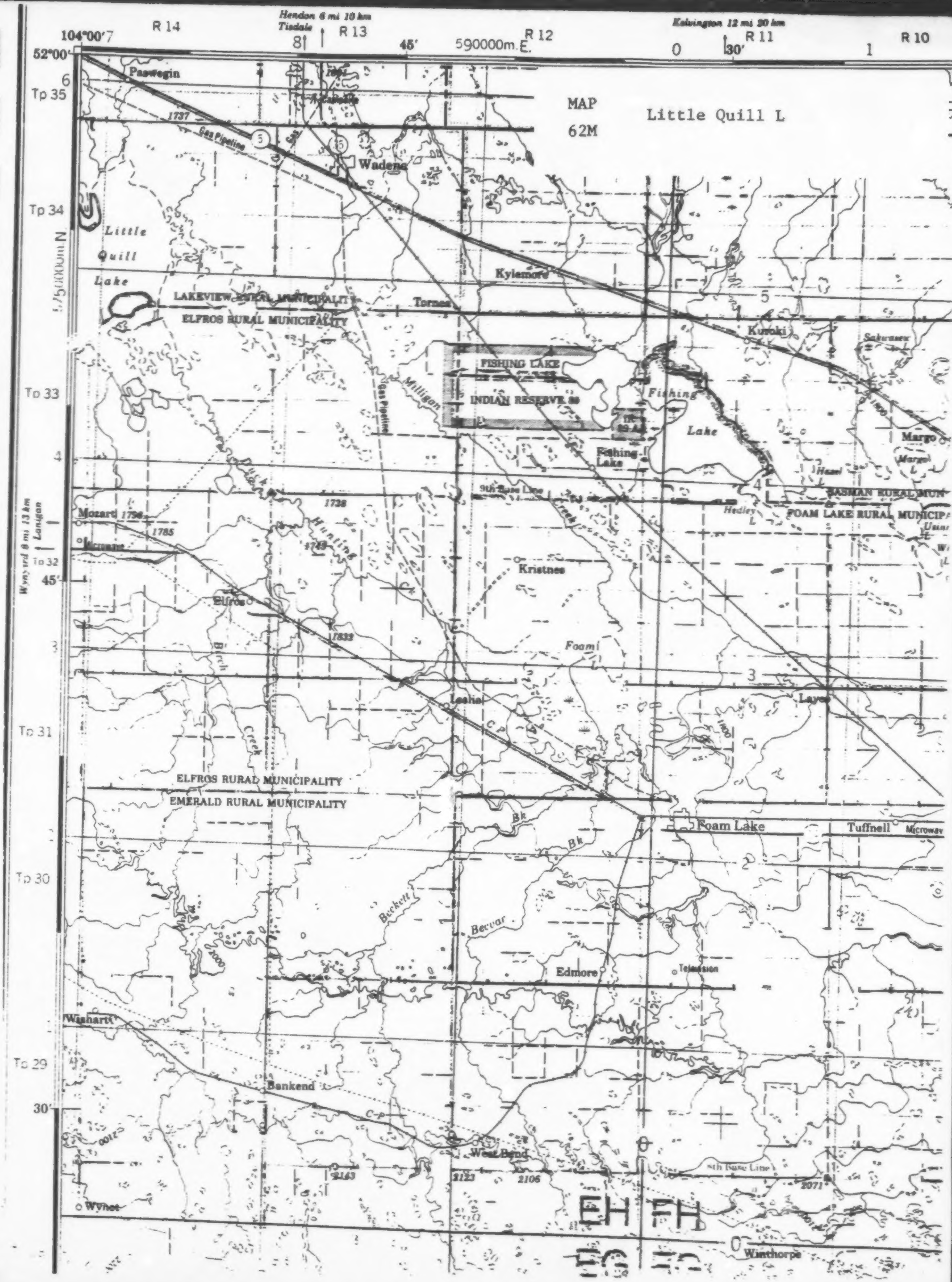
MAP 72P

Kutawagan L complex
Lac du Chemin
Big Quill L
Little Quill L

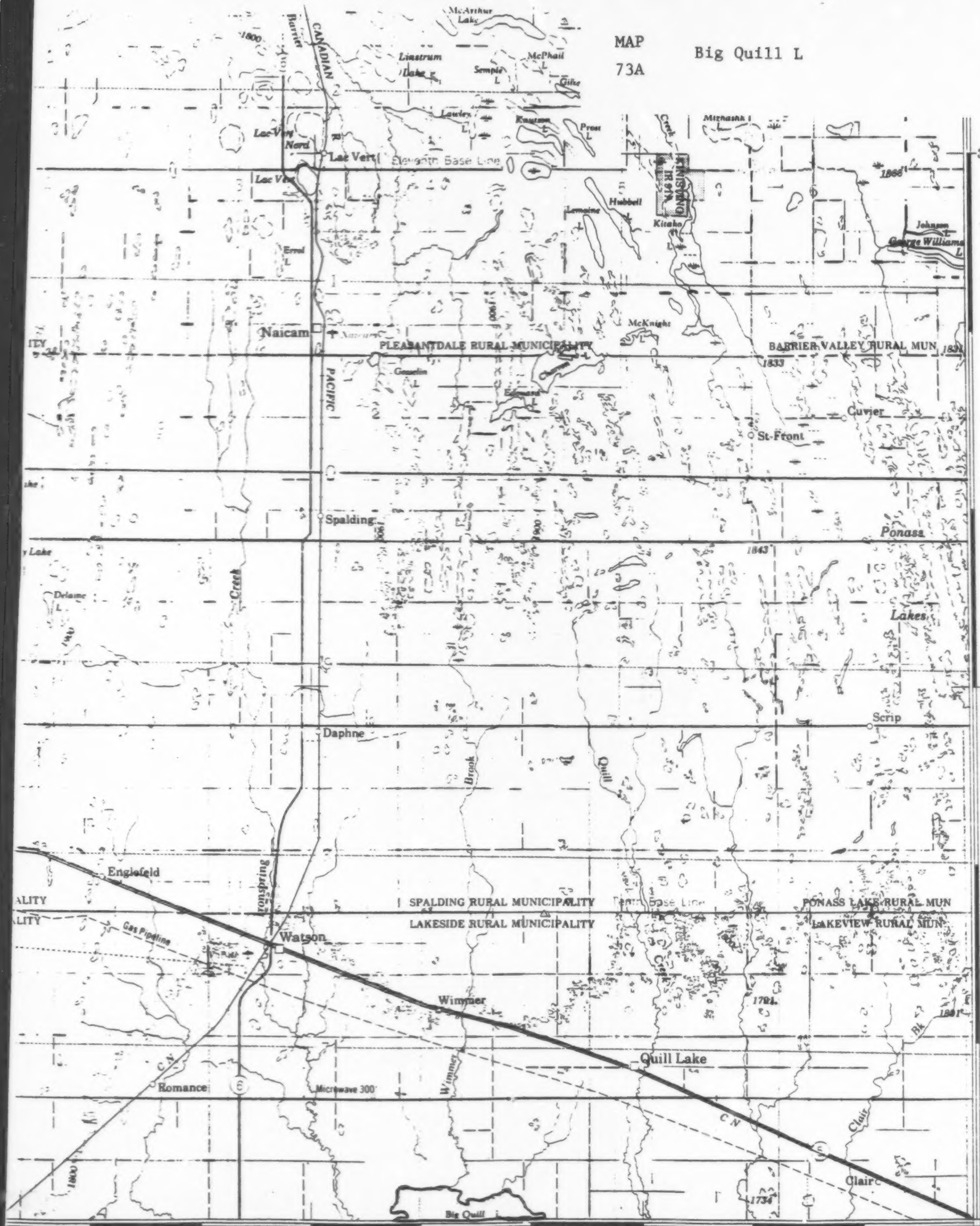
MAP

62M

Little Quill L



Hendon 6 mi 10 km
Tisdale
Kelvington 12 mi 20 km
104°00'7
52°00'
R 14
R 13
R 12
R 11
R 10
45'
30'
590000m.E.
5750000m.N.
Tp 35
Tp 34
Tp 33
Tp 32
Tp 31
Tp 30
Tp 29
45'
30'
Paswegin
Wadena
Gas Pipeline
1737
Little Quill Lake
LAKEVIEW RURAL MUNICIPALITY
ELFROS RURAL MUNICIPALITY
Kylemore
Tornea
Kuroki
Sokrasen
FISHING LAKE
INDIAN RESERVE 89
IR 89 AA
Fishing Lake
Fishing Lake
Margo
Margo L
Hazel
Milligan
9th Base Line
Hedley L
KAMSAN RURAL MUN
FOAM LAKE RURAL MUNICIPA
Wynyard 8 mi 13 km
Lanigan
Mozart
1736
1785
Leroy
1738
1745
Hunting
Kristnes
Elfros
1833
Foam L
Leslie
CP
Layco
1900
Birch Creek
ELFROS RURAL MUNICIPALITY
EMERALD RURAL MUNICIPALITY
Foam Lake
Tuffnell
Microwav
Bk
Beckett
Beaver
2000
Edmore
Television
Wishart
Bankend
C-P
2100
West Bend
2143
2123
2106
8th Base Line
2071
Wynot
Winthorpe
EH
FH
EG
FG



MAP

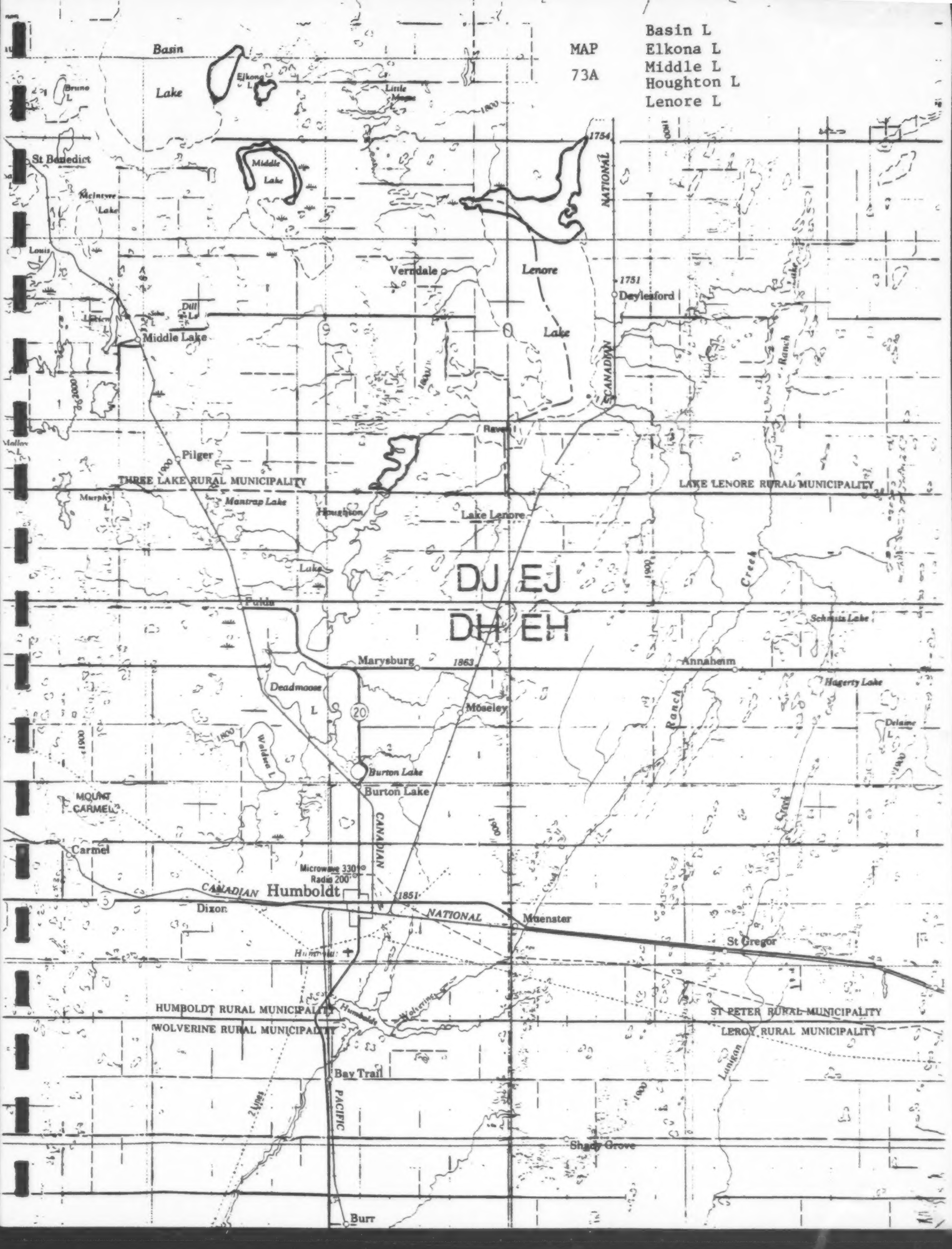
73A

Big Quill L

McArthur Lake
Barrier
CANADIAN
1800
Linstrum Lake
Semple L
McPhail L
Gillie
Lawley L
Kautzman L
Frost L
Mighashk L
Lac Vert Nord
Lac Vert
Eleventh Base Line
30'
1866
Lemoine
Hubbell
KINISTINO I.R. 91A
Kitako L
Errol L
Johnson L
George Williams L
Naicam
McKnight L
PLEASANTDALE RURAL MUNICIPALITY
BARRIER VALLEY RURAL MUN
1833
Gosselin L
Edmund
PACIFIC
Cuvier
St-Front
Spalding
1900
Ponass
1843
Delaine L
Lakes
Creek
Scrip
Daphne
Quill
Brook
Englefeld
SPALDING RURAL MUNICIPALITY
Tenth Base Line
PONASS LAKE RURAL MUN
LAKESIDE RURAL MUNICIPALITY
LAKEVIEW RURAL MUN
Gas Pipeline
Ironspring
Watson
Wimmer
1791
1801
C.N.
Quill Lake
Romance
6
Microwave 300'
Wimmer
Creek
C N
5
Clair
Clair
1734
1800
Big Quill
R 19
3
R 18
30'
4
R 17
5
15'
R 16
560000m.E.
R 15
104°00'

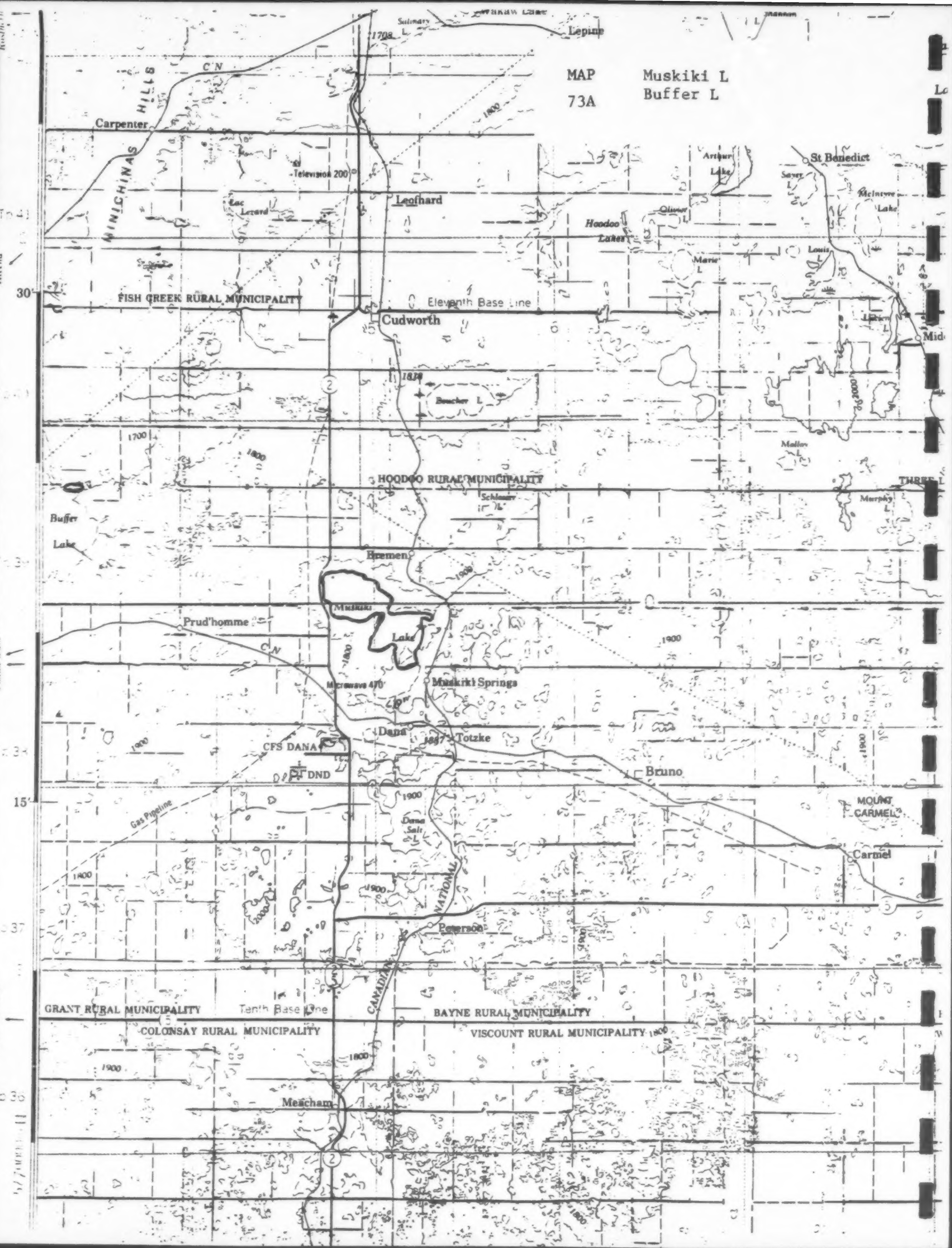
MAP
73A

Basin L
Elkona L
Middle L
Houghton L
Lenore L


Basin
Lake
Elkona L
Little Manitou
Bruno L
St Benedict
Middle Lake
McIntyre Lake
Louis L
Dill L
Lucien L
Middle Lake
1754
NATIONAL
Verndale
Lenore
Lake
1751
Daylesford
CANADIAN
Ranch
Lake
Raven
Pilger
Malloy L
THREE LAKE RURAL MUNICIPALITY
Mantrap Lake
Murphy L
Houghton
Lake
Lake Lenore
LAKE LENORE RURAL MUNICIPALITY
Creek
DJ EJ
DH EH
Fulda
Schmits Lake
Marysburg
1863
Annaheim
Hagerty Lake
Deadmoose
L
20
Moseley
Ranch
Delaine L
Waldsea L
Burton Lake
Burton Lake
MOUNT CARMEL
CANADIAN
Creek
Carmel
Microwave 330'
Radio 200'
CANADIAN
Humboldt
1851
5
Dixon
NATIONAL
Muenster
St Gregor
Humboldt
HUMBOLDT RURAL MUNICIPALITY
WOLVERINE RURAL MUNICIPALITY
Humboldt
Wolverine
ST PETER RURAL MUNICIPALITY
LEROY RURAL MUNICIPALITY
Bay Trail
Lanigan
PACIFIC
Shady Grove
Burr
1800
1900
2000

MAP 73A

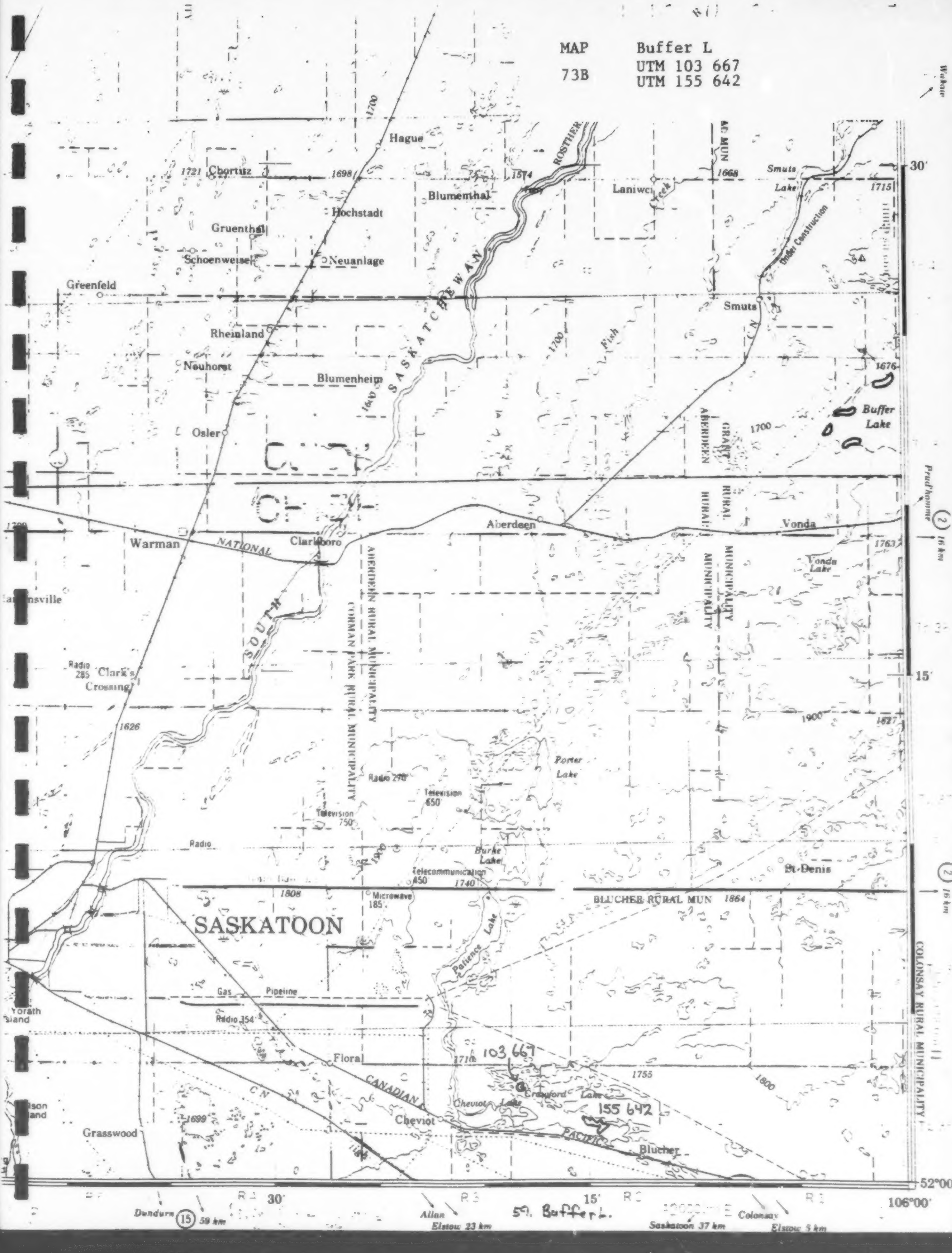
Muskiki L
Buffer L



Lepine
Solitary L
1708
C N
MINICHINAS HILLS
Carpenter
Television 200
Leofhard
Lac Lezard
Arthur Lake
St Benedict
Sayer L
McIntyre Lake
Oliver
Hoodoo Lakes
Marie L
Louis L
Tp 41
30'
FISH CREEK RURAL MUNICIPALITY
Eleventh Base Line
Cudworth
Mid
2
1838
Boucher L
2000
1700
1800
Mallov
HOODOO RURAL MUNICIPALITY
Schlosser L
THREE L
Murphy L
Buffer Lake
Bremen
1900
Muskiki Lake
Prud'homme
CN
Muskiki Springs
Microwave 470
Dana
Totzke
CFS DANA
DND
Bruno
15'
Gas Pipeline
1900
MOUNT CARMEL
Dana Salt L
Carmel
5
1800
Tp 37
Peterson
CANADIAN NATIONAL
GRANT RURAL MUNICIPALITY
Tenth Base Line
BAYNE RURAL MUNICIPALITY
COLONSAY RURAL MUNICIPALITY
VISCOUNT RURAL MUNICIPALITY
Saskatoon 42 km
Tp 36
Meacham
2

MAP 73B

Buffer L
UTM 103 667
UTM 155 642


Hague
1700
1721
Chortitz
1698
Hochstadt
Gruenthal
Schoenweisel
Neuanlage
Greenfeld
Rheinland
Neuhorst
Blumenheim
Osler
Blumenthal
1574
ROSTHERN
SASKATCHEWAN
Laniwci
Creek
1668
Smuts Lake
1715
Under Construction
Smuts
Fish
1700
CN
1676
Buffer Lake
1700
ABERDEEN RURAL MUNICIPALITY
GRANT RURAL MUNICIPALITY
Prud'homme
2
16 km
Aberdeen
Vonda
1763
Vonda Lake
Warman
NATIONAL
Clarkboro
Martensville
SOUTH
CORMAN PARK RURAL MUNICIPALITY
Radio 285
Clark's Crossing
1626
15'
30'
1900
1827
Porter Lake
Radio 290
Television 650
Television 750
Radio
1900
Burke Lake
Telecommunication 450
1740
1808
Microwave 185
St-Denis
BLUCHER RURAL MUN
1864
2
16 km
COLONSAY RURAL MUNICIPALITY
SASKATOON
Patience Lake
Gas Pipeline
Yorath Island
Radio 354
Flora
CANADIAN
CN
1710
103 667
1755
1800
Cheviot Lake
Crawford Lake
155 642
Cheviot
PACIFIC
Blucher
Wilson Island
1699
Grasswood
52°00
R4
30'
R3
15'
R2
R1
106°00'
Dundurn
15
59 km
Allan
Elstow 23 km
Saskatoon 37 km
Colonsay
Elstow 5 km
Wakaw

59. Buffer L.

64, Redberry L.

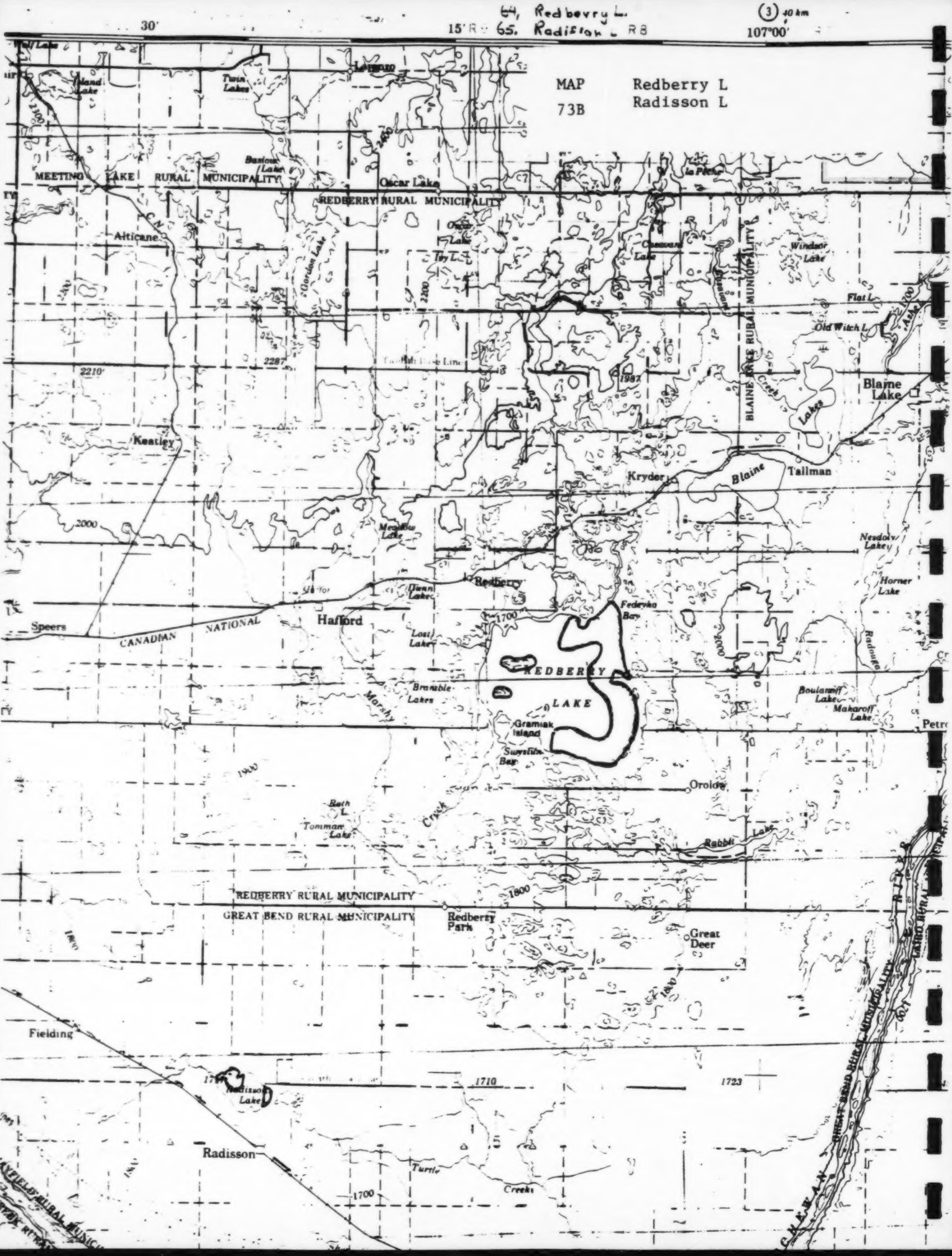
65. Radisson L R8

(3) 10 km

MAP 73B

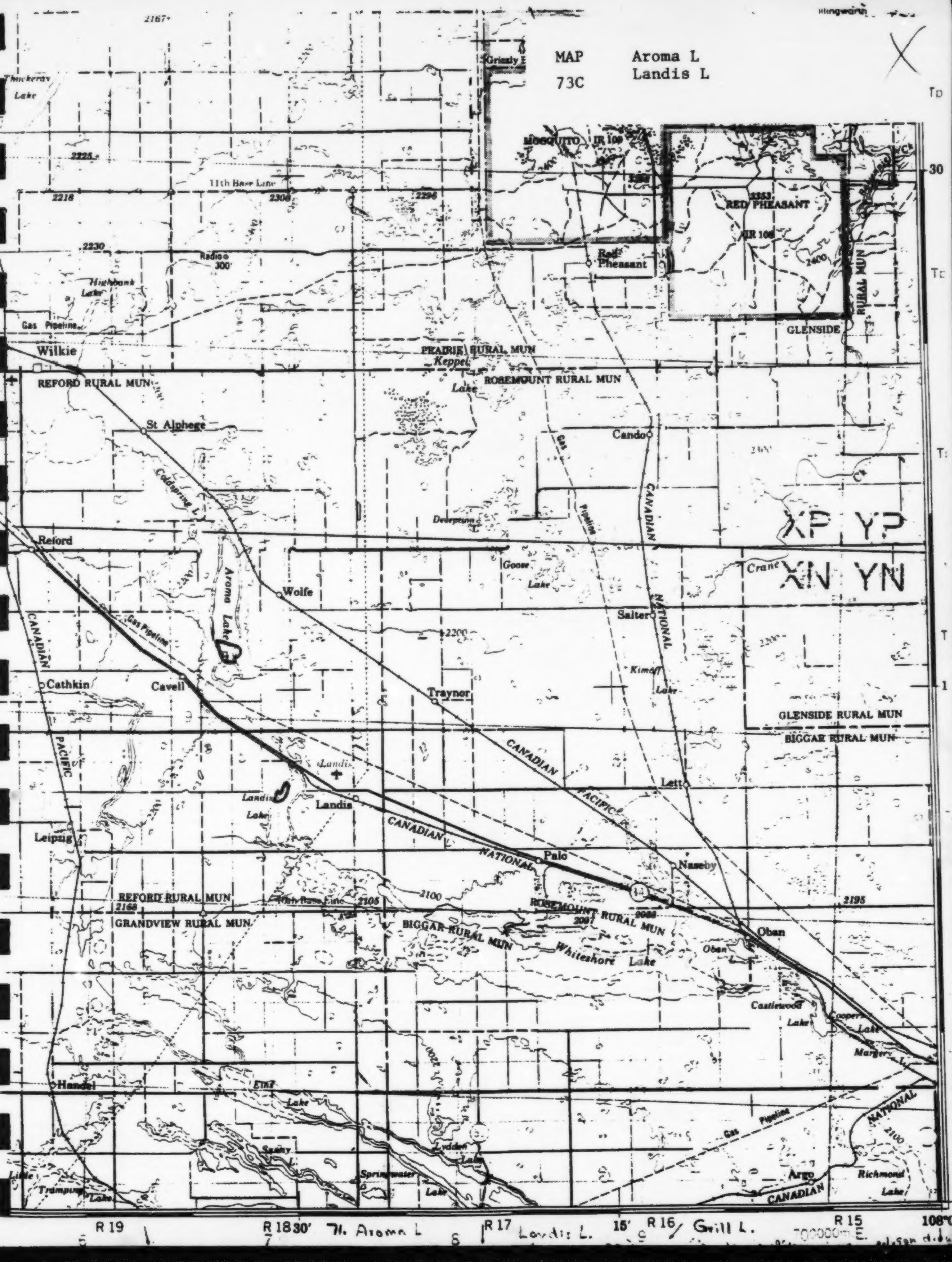
Redberry L

Radisson L



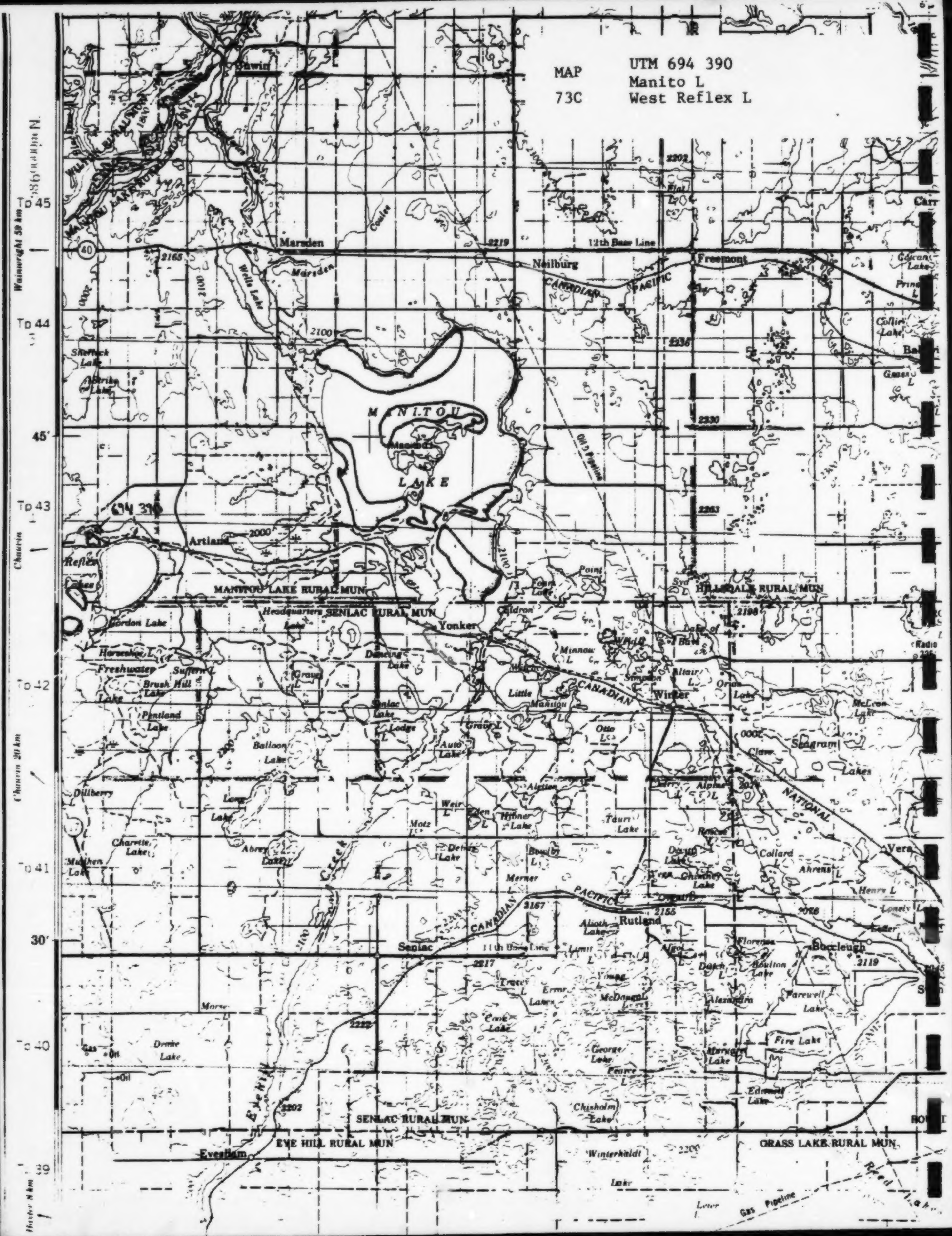
30'
15'
107°00'
Island Lake
Twin Lakes
Leoville
Basinon Lake
MEETING LAKE RURAL MUNICIPALITY
Oscar Lake
REDBERRY RURAL MUNICIPALITY
Alticane
C.N.
Gordon Lake
Oscar Lake
Ivy L.
Chesnut Lake
Windsor Lake
Flat L.
Old Witch L.
BLAINE LAKE RURAL MUNICIPALITY
Blaine Lake
Lakes
Creek
2210'
2287
1987
Keatley
Kryder
Blaine
Tallman
2000
Meadow Lake
Nesdoly Lakes
Horner Lake
Redberry
Dunn Lakes
Speers
CANADIAN NATIONAL
Hafford
Lost Lake
1700
Fedeyko Bay
REDBERRY LAKE
Gramiak Island
Sunshine Bay
Bramble Lakes
Marshy Creek
Boulanoff Lake
Makaroff Lake
Petro
1900
Oroloy
Beth L.
Tomman Lake
Rabbit Lake
REDBERRY RURAL MUNICIPALITY
GREAT BEND RURAL MUNICIPALITY
1800
Redberry Park
Great Deer
Fielding
Radisson Lake
1710
1723
Radisson
Turtle Creek
1700
GREAT BEND RURAL MUNICIPALITY
LAIRD RURAL MUNICIPALITY
SASKATCHEWAN RIVER

MAP　Aroma L
73C　Landis L


Thackeray Lake
11th Base Line
Grizzly
MOSQUITO IR 109
RED PHEASANT
IR 108
Red Pheasant
GLENSIDE
RURAL MUN
Highbank Lake
Radio 300'
Gas Pipeline
Wilkie
PRAIRIE RURAL MUN
Keppel Lake
REFORD RURAL MUN
ROSEMOUNT RURAL MUN
St Alphege
Cando
Coldspring L
Deeptonne L
Reford
Goose Lake
Crane
Aroma Lake
Wolfe
Salter
CANADIAN NATIONAL
CANADIAN PACIFIC
Gas Pipeline
Kimoff Lake
Cathkin
Cavell
Traynor
GLENSIDE RURAL MUN
BIGGAR RURAL MUN
Landis
Landis Lake
Lett
Leipzig
Palo
Naseby
REFORD RURAL MUN
GRANDVIEW RURAL MUN
10th Base Line
ROSEMOUNT RURAL MUN
BIGGAR RURAL MUN
Whiteshore Lake
Oban
Oban
Castlewood Lake
Cooper Lake
Margaret L
Handel
Eino Lake
Snaky L
Lydden Lake
Springwater Lake
Little Tramping Lake
Argo
Richmond Lake
2167
2225
2218
2300
2298
2330
2353
2400
2200
2100
2168
2105
2195
2090
XP YP
XN YN
R 19
R 18 30'
R 17
15'
R 16
R 15
108°0'
700000m.E.

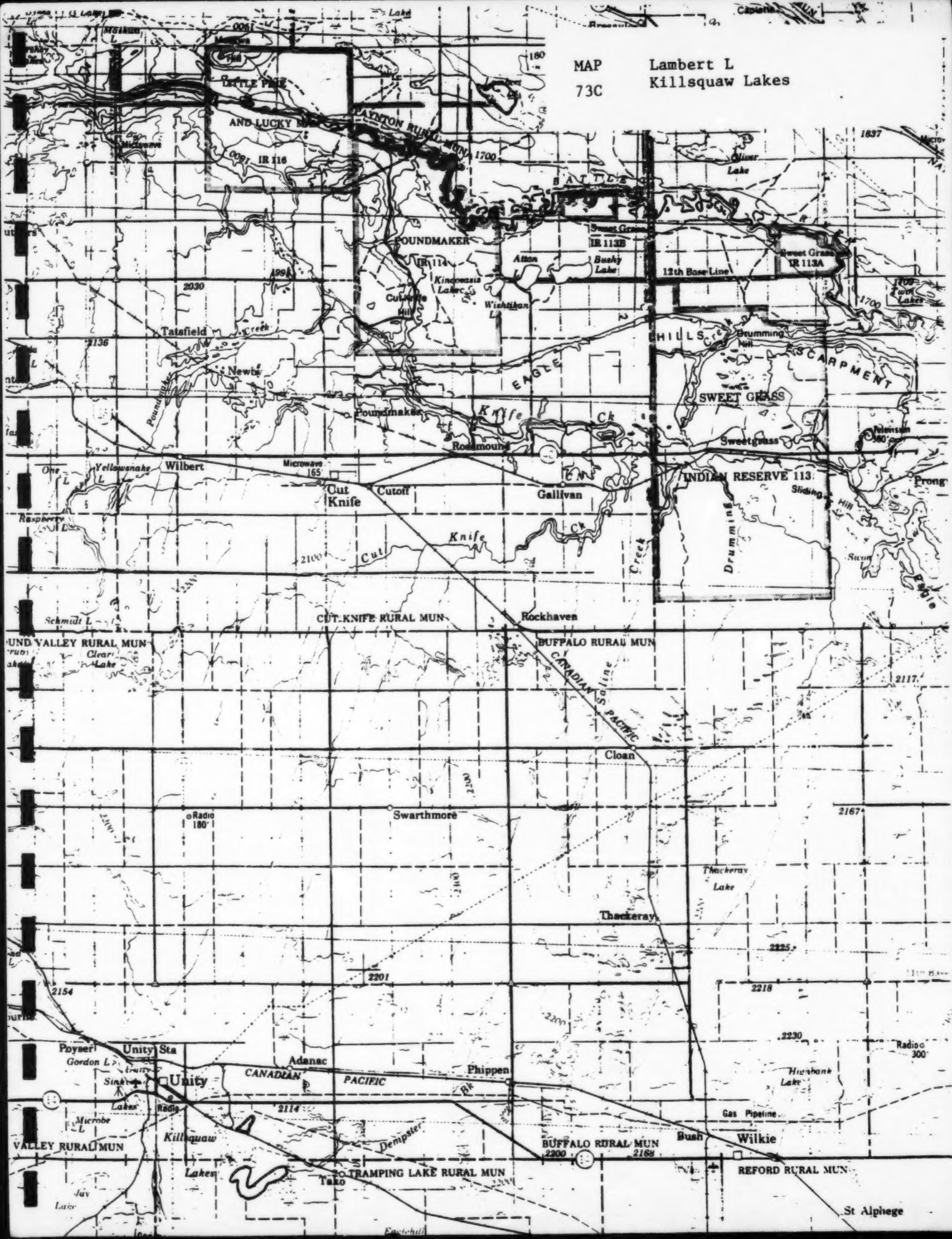
6　1.　7　71. Aroma L　8　Landis L.　9　Grill L.

MAP UTM 694 390
Manito L
73C West Reflex L


Tp 45
Tp 44
45'
Tp 43
694 390
Tp 42
Tp 41
30'
Tp 40
39
Wainwright 59 km
Chauvin
Chauvin 20 km
Hardisty 8 km
Dewin
Marsden
40
2165
2200
2100
Wells Lake
Coulee
2219
12th Base Line
Neilburg
Freemont
CANADIAN PACIFIC
2202
Flat L
Carr
Cairan Lake
Prince L
Collier Lake
Gass L
2236
2230
2263
Oil 2 Pipeline
Skeffeck Lake
Strike Lake
MANITOU LAKE
Artland
2000
Reflex Lakes
Point L
Fox Lake
Syd L
MANITOU LAKE RURAL MUN
HILLSDALE RURAL MUN
Gordon Lake
Headquarters Lake
SENLAC RURAL MUN
Yonker
Caldron
2198
Horseshoe L
Freshwater Lake
Sufferer L
Brush Hill Lake
Pentland Lake
Gray L
Dancing Lake
Minnow L
Lake of 1 Bore
Radio
Wells L
Little Manitou
CANADIAN
Simpson
Altair L
Winter
Orion Lake
McCrae Lake
Senlac Lake
Lodge L
Gray L
Auto Lake
Otto L
Balloon Lake
Clare L
Seagram Lakes
Dillberry L
Alettee
Jerry L
Alpine L
NATIONAL
Long Lake
Motz
Weir L
Eden L
Hibner Lake
Tauri Lake
Charette Lake
Abrey Lake
Creek
Debus Lake
Bowlby L
Dewitt Lake
Collard
Ahrens L
Vera
Matthen Lake
Merner
Chinchey Lake
Henry L
Lonely Lake
PACIFIC
2167
2155
Keller
Alioth Lake
Rutland
CANADIAN
Senlac
11th Base Line
Limit L
Algol L
Florence
Buccleugh
2119
2045
Dutch L
Boulton Lake
2217
Tracey L
Errol Lake
Young L
McDonell L
Alexandra
Farewell Lake
Morse
Cook Lake
2222
Gas
Oil
Drake Lake
George Lake
Margaret Lake
Fire Lake
Oil
Pearce L
Eye Hill
2202
Edmund Lake
Chisholm Lake
SENLAC RURAL MUN
EYE HILL RURAL MUN
GRASS LAKE RURAL MUN
Evesham
Winterhaldt
2200
Lake
Lower L
Gas Pipeline
Reed Lake

MAP 73C

Lambert L
Killsquaw Lakes



LITTLE PINE
AND LUCKY MAN
IR 116
PAYNTON RURAL MUN
BATTLE
Oliver Lake
Sweet Grass IR 113B
Sweet Grass IR 113A
12th Base Line
POUNDMAKER
IR 114
Kingsessis Lake
Cutknife Hill
Wishtikan L
Atton
Bushy Lake
Twin Lakes
Tatsfield
Creek
Newby
EAGLE
HILLS
Drumming Hill
SCARPMENT
SWEET GRASS
Poundmaker
Knife
Ck
Rosmound
Sweetgrass
Wilbert
Yellowsnake L
One L
Microwave 165'
Cut Knife
Cutoff
Gallivan
CN
INDIAN RESERVE 113
Sliding Hill
Prong
Raspberry L
Cut
Knife
Ck
Creek
Drumming
Schmidt L
CUT KNIFE RURAL MUN
Rockhaven
BUFFALO RURAL MUN
ROUND VALLEY RURAL MUN
Clear Lake
CANADIAN
PACIFIC
Saline
Cloan
Radio 180'
Swarthmore
Thackeray Lake
Thackeray
2201
2218
2230
2225
2167
2117
2154
2114
2200
2168
2030
2136
2100
1700
1637
Radio 300'
Poyser
Unity Sta
Gordon L
Unity
Adanac
CANADIAN
PACIFIC
Phippen
Highbank Lake
Gas Pipeline
Microbe L
Radio
Killsquaw
Lakes
Dempster
Bush
Wilkie
VALLEY RURAL MUN
BUFFALO RURAL MUN
TRAMPING LAKE RURAL MUN
REFORD RURAL MUN
Tako
Jay Lake
St Alphege